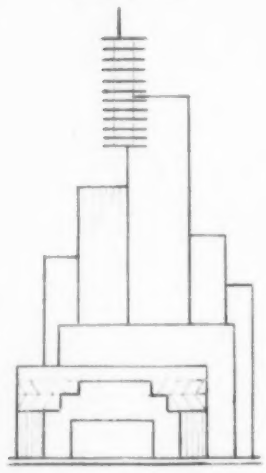
Ed Wynn, the Texaco Fire Chief, is made an honorary chief of the Chicago Fire Department in a mock ceremony on the Fair grounds.

Adorable Josephine Hall, who appears at Chicago's leading night club, the Chez Paree. Her titian beauty and successful film tests have captured the attention of Hollywood.

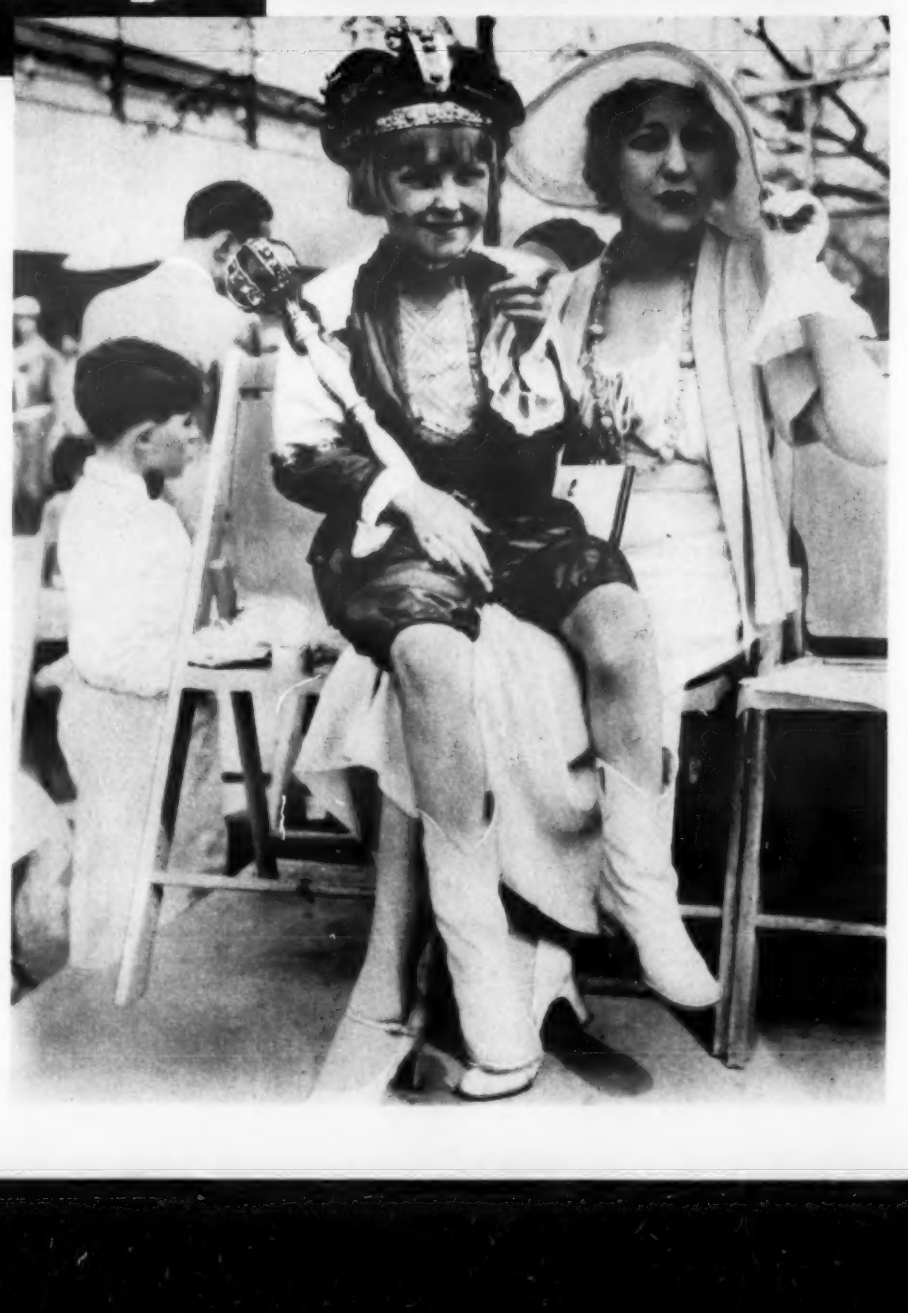
Loretta Poynton (below), leading lady in the play, "Skidding," at Chicago's Studebaker theatre.

Bert Wheeler, of the Wheeler-Woolsey team, helps Olive Borden, film star, don make-up for a picture to be made at the Fair

Ruth Hall, 1933 Wampas Baby Star, relies on a Norge to keep her fruit diet cold and appetizing. She is featured in Monogram productions.



Dorothy Stone, (right) daughter of Fred Stone and a stage luminary in her own right, gets acquainted with Billy Vallie on Enchanted Island at A Century of Progress. Miss Stone is appearing in Chicago in "Gay Divorce."



THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

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BLUE EAGLE EVENTS

Aug. 30—Nema Refrigeration Division

G. M. Johnston, president of Universal Cooler Corp., Detroit, and chairman of the Refrigeration Division of National Electrical Manufacturers Association (Nema), has called a meeting of member companies to be held at the Book-Cadillac hotel in Detroit, Wednesday, Aug. 30 at 10 a. m. at which final action will be taken on the Code of Fair Practice for refrigeration manufacturers which will supplement the broad Nema code already signed by President Roosevelt.

Aug. 31—Accessory Manufacturers

Walter Seeger, vice president of Seeger Refrigerator Co., St. Paul, Minn., and temporary chairman of the Association of Electric Refrigeration Accessory Manufacturers has called a meeting to be held at the Book-Cadillac hotel in Detroit, Thursday, Aug. 31 at 10 a. m. *All manufacturers of refrigeration parts, supplies and materials are invited to attend.*

Aug. 31—Beer Cooling Directory

In order to permit all manufacturers who have signed the President's re-employment agreement to display the Blue Eagle insignia in their advertisements in the new BEER COOLING DIRECTORY AND HANDBOOK, the closing date for this Directory has been postponed until Aug. 31. Blue Eagle cuts will be furnished without charge and the insignia will be imprinted in *blue,* if desired by the advertiser, *without charge for the extra color printing.*

Sept. 6—"Blue Eagle Issue"

Names of all manufacturers of refrigeration equipment, parts, supplies and materials who have signed the President's re-employment agreement, including agreements subject to modification by the codes proposed by industry associations, will be listed in ELECTRIC REFRIGERATION NEWS, Sept. 6, 1933. *There will be no charge for this listing.* In addition, the Blue Eagle will be imprinted in blue in all advertisements of such companies, in that issue, *without charge for the extra color printing.*

PARTS MAKERS TO DRAFT CODE NEXT THURSDAY

Expect to Complete NRA Organization Under Nema

DETROIT — The following notice was mailed Aug. 17, to all known manufacturers of electric refrigeration accessories:

"A meeting of the Association of Electric Refrigeration Accessory Manufacturers will be held at the Book-Cadillac hotel in Detroit at 10:00 a. m. Thursday, Aug. 31, 1933. All manufacturers of refrigeration parts, supplies and materials are invited to attend.

"This meeting is called for the following purposes:

"(1) To complete a permanent organization. The preliminary meeting held in Chicago Aug. 7, 1933, was called on short notice and the undersigned executive committee was appointed to act only until a permanent organization could be formed.

"(2) To consider the proposal that this association become a division of National Electrical Manufacturers Association (Nema) in order to take advantage of the liberal provisions of the broad Nema code which has already been approved by the President, to simplify the problems of carrying on an association activity by making use of the established Nema facilities, and to effect a proper relationship with the manufacturers of complete systems who are already organized as a division of Nema.

"(3) To adopt a code of fair practice for manufacturers of refrigeration accessories to be submitted to the National Recovery Administration directly, or if the Nema proposal is approved, to be submitted through the proper channels as a code supplementary to the Nema code.

"The committee is conscious of the problems of overlapping industries and is aware that many manufacturers in this field already have contacts with the NRA through other associations. However, on account of the fact that any code of fair practice which is approved by the President will become effective as law governing business in this field, it appears highly desirable that all those who may have a future interest in such regulations shall have a voice in their preparation. We therefore urge

(Concluded on Page 20, Column 4)

Copeland Plant Up for Sale

MT. CLEMENS, Mich., Aug. 22.—All properties of Copeland Products, Inc., including accounts receivable, merchandise inventory, machinery and equipment, good will, and all other assets excepting real estate will be placed on open sale at the plant here at 11 a. m. Friday, Aug. 25, according to a statement made today by A. C. Flood, trustee who will conduct the sale.

No bids will be accepted, said Mr. Flood, unless accompanied by a certified check for $50,000. Decision to sell the company's properties was reached at a meeting of the advisory committee of creditors held in Detroit last week. At present, the Copeland plant is operating five days a week, and will be sold, Trustee Flood stated, as a going concern.

Members of the creditors' committee are as follows: Ralph Romer, First National Bank, Detroit, chairman; Lester V. Larkin, vice president, Larkin Refrigerating Corp.; J. W. Baillie, comptroller, Detroit Lubricator Co.; A. T. Lauer, Bohn Aluminum & Brass Corp.; Joseph A. Quigley, General Contract Purchasing Corp.; and W. C. Leonhardt, Guardian National Bank of Commerce, Detroit.

FRIGIDAIRE INSTALLS AIR CONDITIONING IN DETROIT MEN'S GRILL

By John T. Schaefer

DETROIT—To condition the air in the new men's grill on the lower floor of Stauffer's restaurant on Washington Blvd. here, the Detroit branch of Frigidaire Corp. has just installed a year 'round air-conditioning system which cools and dehumidifies the air in summer, and heats in winter.

Seating capacity of the new grill is 150 customers. Stauffer's main restaurant upstairs was provided with 21 tons of Frigidaire air-conditioning equipment last year.

The air-conditioning equipment is all installed in a special room provided for that purpose, according to E. E. McEwan, air-conditioning manager of the Frigidaire branch. The entire system, including air-distributing ducts and heating coils, was laid out by Frigidaire men here.

In the "equipment room" are two 10-ton compressors operating with Freon refrigerant, six 3-ton Frigidaire evaporators in the duct which distributes the conditioned air, the heating coils for connection to the existing steam-heating system in winter,

(Concluded on Page 20, Column 3)

NEW MAJESTIC RADIOS SHOWN TO DISTRIBUTORS

'Duo-Valve Circuit' Is Feature of 1933 'Smart Set'

By George F. Taubeneck

CHICAGO — "Majestic—the Smart Set of Radio." That's the new slogan which will be featured in all Majestic radio advertising this fall and winter, and was the theme song of the Majestic distributors' meeting at the Edgewater Beach hotel Aug. 14, 15, and 16.

It was the first convention of Grigsby-Grunow Co. conducted by the "New Deal" management; and John Ditzell, general sales manager and assistant vice president, showed the distributors a fall line of radios in which there is a great deal that is *new.* He also promised interesting innovations in refrigeration for 1934.

For the remainder of the 1933 refrigeration selling season, a Dormeyer food mixer will be offered free with every purchase of a Majestic refrigerator, according to Harry Alter, assistant general sales manager.

Style is the dominant note in the new radio line. Table sets, of which there are 11, ranging from $19.50 to $42.50 at retail, especially reflect the modernistic lines glorified at A Century of Progress.

Ranging in price from $57.50 to $99.50, the console models are more conservative—a motif based on the theory that were so large a piece of furniture as a console radio extreme in design, it would not harmonize with other furniture in most homes.

"Duo-valve circuit and self-shielded tubes, with the efficiency of two extra tubes" is the performance theme of coming Majestic radio sales promotion. By using three of the tubes for two different purposes, Majestic engineers claim they get extra efficiency and power. Number of tubes in Majestic chassis are four, five, six, and eight.

One of the table sets, the Radiograph, is a combination phonograph and five-tube radio, with dual-range reception (535 to 1,500 and 1,480 to 4,400 K.C.). Another table set, the Fireside, is a six-tube receiver designed for 32-volt D.C. operation—which makes it available for use in

(Concluded on Page 20, Column 1)

G-E WAGE, HOUR CHANGES COMPLETED ON AUGUST 7

SCHENECTADY, N. Y.—General Electric Co. anticipated the adoption of the National Electrical Manufacturers Association's code by one week, all changes in hours and wages having been completed Aug. 7, according to Gerard Swope, president.

Working time of 36 hours per week in the factories became effective at that time, while the 40-hour week in the offices has been in operation since April, 1931.

Wages and salaries have been increased where necessary to meet the minimum, Mr. Swope said. Such increases, together with other raises, have added $8,000,000 per year to the company's payroll. More than 42,000 employes have been affected by the raises, including almost 2,000 which have been added to the working force.

150 G-E AIR-CONDITIONING DEALERS CONVENE IN N. Y.

NEW YORK CITY—Research engineering, manufacturing, sales, and advertising programs of the General Electric air-conditioning department were all dramatized for the group of over 150 dealers and sales managers who congregated from all parts of the country for the first national sales meeting of the department at the Electrical Institute here recently.

J. J. Donovan, manager of the department, opened the two-day convention and directed most of its activities. Luncheon each day was served in the Continental Roof cafe of the

(Concluded on Page 20, Column 5)

Deadline Extended on Gibson Girl Contest

GREENVILLE, Mich.—An extension of 10 days added to the national Gibson Girl contest now being conducted by Gibson distributors and dealers to locate the 1933 Gibson girl has advanced the closing date from Aug. 31 to Sept. 10.

Requests from selling organizations that girls now away on summer vacations be given the opportunity to compete in the early fall resulted in the change of date.

In addition to the prizes being awarded winners in the contest, three cash prizes of $250, $100, and $50 will go to dealers having the best window displays featuring the Gibson girl idea.

In Illinois—Where You Can Stand Up to a Bar

Special octagonal Brunswick bar installed in Harding's Blue Ribbon Spa at Jackson and Michigan Blvds., Chicago. Beer is served from two coil boxes. Workboard is Monel, while the bar top has been made alcohol-proof.

Bureau Offers Awards For Best Fall Shows

NEW YORK CITY—Seven cash awards totaling $1,150 are being offered by the Electric Refrigeration Bureau for the best cooperative electric refrigeration shows held Sept. 30 to Oct. 7—third annual refrigeration week sponsored by the bureau.

Basis for judging the contest will provide equal opportunities for bureaus in both large and small communities, according to an announcement from the Electric Refrigeration Bureau. First award being offered is $500; second, $250; third, $150; fourth, $100; fifth, $75; sixth, $50; and seventh, $25.

SPECIFICATIONS OF COMMERCIAL CONDENSING UNITS IN THIS ISSUE

BY GEORGE F. TAUBENECK - - -

The Smart Set

Back in the days when H. L. MENCKEN was an unholy terror and edited "Smart Set" magazine, that phrase—used to denote the country club and motor yacht crowd—was much in the public mouth.

Haven't heard it much recently, however, until JOHN DITZELL and EARL HADLEY, general sales manager and advertising manager, respectively, of Grigsby-Grunow Co., revived it to characterize the new Majestic radio line.

The name fits. Smart, indeed, are these modernistically designed table set radios. Just the kind you's expect if you knew Messrs. Ditzell and Hadley—for these two gentlemen are smooth, sophisticated, modern, and as up-to-date as your morning newspaper.

Mr. Ditzell is as suave and ambassadorial a person as you'll see anywhere—Washington included.

So, too, is Le ROI WILLIAMS, who is second only to B. J. GRIGSBY himself in the company. Mr. Williams, a successful practicing lawyer, is an aggressive, dynamic personality who would lend prestige to any manufacturing organization.

A trained speaker, his legal mind is well adapted to the task of summarizing a convention, for extracting the dominant ideas from the welter of discussion, and tagging these ideas with colorful phrases.

Next to "the Smart Set," we like best his phrase for the new Majestic radios:

"Products which smile out of the window at you."

* * *

Phonograph Records—A Majestic Product

Did you know that, in addition to Majestic radios and refrigerators, an important branch of Grigsby-Grunow Co. is the manufacture of phonograph records?

Grigsby-Grunow now controls the old Columbia phonograph company, you know, and is engaged in supplying the still active market for records.

E. F. STEVENS, Columbia's vice president in charge of sales (with offices at 55 Fifth Ave., New York City) was present at the Majestic distributors' meeting last week in Chicago, and very kindly took off a good chunk of an afternoon to tell us something about the business of making and selling records.

Phonograph records, it seems, are much similar to moving pictures—in that everything depends on pleasing current public taste. Again, as in the case of the movies, the producers must consider the highly important foreign market. This is particularly true in the case of Columbia.

Once we heard the highly talented EARL HINES, colored pianist and orchestra director, tell about his troubles with the recording companies. He had become famous because of his distinctive arrangements and rhythmatic schemes; yet, he complained, the recording directors insisted that he discard his original arrangements, and play very conventional orchestrations. All that, of course, seared Earl's individualistic soul.

According to Mr. Stevens, the answer is that bizarre arrangements of the Hines variety won't sell. Customers demand records by Earl Hines, but they are disappointed if they can't "understand" 'em after they buy 'em. So Earl, like LOPEZ, LOMBARDO, TED LEWIS, FRED WARING, HAL KEMP, and other individualists, must play music as record-buyers want it played.

It is the business of record producers to find out just what that public preference is.

True, the particular flavor and swing of the various bands are preserved. On exclusive Columbia contract, for instance, are GEORGE OLSEN, BEN BERNIE, TED LEWIS, CLYDE McCOY, PHIL HARRIS, ART KASSEL, CHARLIE AGNEW, MARK FISHER, and PAUL ASH.

When a new tune comes out, it is assigned to whichever band the producers think can do it best.

Bernie, of course, for the comedy and gay tunes. George Olsen for the "smash hits," the numbers which everyone will whistle for a few weeks. Phil Harris for lilting rhythm. Clyde McCoy for the snappy numbers, and especially those which afford an excuse for intricate trumpeting. (Stevens thinks young McCoy is the greatest trumpeter since LOUIS PANICO—and that includes LOUIS ARMSTRONG and HENRY "When-Day-Is-Done" BUSSE). Mark Fisher when a big band is indicated.

When JOHN DITZELL was in charge of the phonograph and record department of a metropolitan department store, he "discovered" Mr. Stevens—then just out of school—and got him a job with Brunswick.

With Brunswick he remained until Grigsby-Grunow bought Columbia. Thereupon Mr. Ditzell became president of Columbia, called for his protege, and now Mr. Stevens is second-in-command at Columbia.

They'll appreciate your patronage.

* * *

Paul Jones Shows Us the Town

'Member the lengthy article we wrote on the city of Chicago sometime ago? By the time a good many native Chicagoans had shaken their heads and wondered how an out-of-towner could know his way around the town so well, we began to feel as if Chicago were our own private little greensward.

And then last week we met PAUL JONES, Servel's advertising and sales promotion manager, in the Big Town. Shux! We hadn't even begun to see it until Paul took us around.

No fooling! It took a former barefoot Indiana country boy, a resident of Evansville, if you please, to show us what lies hidden behind the imposing externals which make Chicago the big, bluff, blustering, blizzardy burg it seems to be.

With BILL RORISON, Servel and Electrolux publicity man, we took a cab to the Ash Can Dump. It certainly looked it. In a section that looked like the cribs of New Orleans, minus the red globes, Paul pushed a button, and the dingy old wall opened up just as if Paul were Ali Baba and had said, "Open Sesame."

Inside was a clean little cubbyhole and one man. He was head waiter, bus boy, cook, dishwasher, buyer, manager, and owner. To skip a lot of interesting detail, the steaks were the best on record.

And then we went to see Gus, who, we understand, is well known among the advertising fraternity. But never having trained much with the Brotherhood of Ballyhoo, Gus was a new one on us.

"Every time anyone walks in for the first time," Paul explained, "Gus rings a bell and the house stands treat."

Sure enough, as soon as Gus saw your favorite correspondent's freckled pan, "bong!" went the musical note, and the brandy was on the house.

Gus also has a very special handshake for each customer. It consists of a pat, a slap, a twist, and a good grip—all very ceremonious and solemn, brother, solemn. He will also tell you about the most ancient game in the world, "boucci." On sunny days the customers play it in the adjoining court.

That, ladeez an' gennemun, was only a start. For a hard-working country boy, Paul gets around.

Incidentally, Messrs. Jones and Rorison are highly stimulating table companions. Both have had many diverse and diverting experiences, and can relate them with gusto.

* * *

Advertising Men vs. Reporters

Chasing around Chicago with Paul, noting the things which interested him, cataloguing his unique observations, and seeing behind many walls which previously had been blank, we acquired a new respect for and admiration of advertising men.

If Servel's Mr. Jones can be taken as a hyperexample of the better type of advertising and sales promotion executive—and he can, if we are to rely on the statements of a number of other industry executives who assert that Paul is one exceptionally capable young man—the advertising man goes the reporter about six better.

Reporters, you know, pride themselves on being clubby with people ordinary folk wouldn't know. All kinds of people, they (or we) will tell you, a bit loftily. But that "all kinds" is erroneous. Reporters are interested chiefly in people who *make news*—"big shots" in various walks of life.

Your newsman will know a "SPIKE" O'DONNELL or a PETE LICAVOLI, and will think himself an authority on gangland and the Little Hells. He will know GEORGE GERSHWIN and JOHNNY GREEN, and consider himself an authority on the Newer Music. He counts among his acquaintances ELEANOR HOLM and LOU GEHRIG, NOEL COWARD, and BILLY MINSKY, Senators PAT HARRISON and HUEY LONG, AIMEE SEMPLE McPHERSON and Father COUGHLIN . . . and so on down the line of the "we have with us tonight" people. To keep in touch with these newsworthy names, your newsman spends off-hours in the haunts which celebrities frequent—unless he is a pseudo-intellectual and enjoys dissolving his inferiority complex in the black coffee of Bohemia.

Advertising men go much farther. They are interested in *masses* of people. "STRAIGHT-EYE" MUZZI won't buy more than one safety razor; but Muzzi's gang may be good for sales of three gross. ETHEL MERMAN may purchase a hundred dollars worth of cosmetics, but the girls who want to emulate her will run the sales totals into seven figures.

It is to these vast armies of people who never make the front pages that the advertising man must address his message. He must know not only how the "other half" lives, but something about the lives and habits of the "buried three-eighths" and the "submerged tenth" as well.

True, scads of advertising men rarely get beyond the "my wife says" stage. They take an idea or a product to their club, to the nineteenth hole, or to a cocktail party, and render judgment based on the reactions of *their own kind*. But not the keen student of mass selling.

A man like Jones, for instance, will stop a taxicab at Chicago's Washington "Bughouse" Square to hear a soapboxer explaining just how the economic system is all wrong; he will listen with delight as a militant cleric from a gospel mission heckles an evangelistic atheist. He will walk across the street and listen to the mumblings of the drifters in front of Newberry library.

* * *

Underworld Rialto

But soon he will move to that North Clark St. section which is the underworld rialto, and where the free spenders among the city's hidden population are wont to congregate and toss their quarters and dollar bills around.

He will browse through the rickety dilapidation of the pawn shops and the second-hand stores; he will watch and listen to the people coming out of the "dimer" movie houses, and the shopgirl and factory-hand dance halls; he will note the traffic in and out of the chain cigar stores; he will visit the chop suey houses and the cheap cabarets (entertainers, hostesses, bootleggers, gold diggers, old men seeking the Fountain of Youth, and grafters of all sorts are like the Jews of old—they must spend their money quickly before they are robbed or driven on); he will observe the technique of those master salesmen, the pitchmen, and he will even watch the beggars and the fakers.

Yes, and he may even move about among the Forgotten Men, the hoboes. Chicago, you know, is the capital city of Hobohemia. Some half a million of these wanderers are said to mosey down North Clark every year. Psychopathics, eccentrics, boasting of exploits of virility, even these bottom-castes may have interest for the sociologically minded advertising men.

* * *

Slum Hideaways

Slum districts, however, don't concern him so much. These people don't read. And here is where your reporter can tell the ballyhoo expert a few things about life.

In that dank world of subcellars and two-families-in-a-room claptraps beavering and mole-ing around the river's wholesale and manufacturing district (which wedges back from Chicago and Grand Avenues) is an individualistic and loose population which will produce fodder for human interest stories on every trip.

Criminal hide-outs (encouraged by the police because they know where to look for men they want), rat-holes infested with self-abnegating foreigners who are piling up miniature fortunes with which they hope to return to the "old country" and live in clover the rest of their days, economic failures with persecution complexes, chronic charity supplicants, derelicts of drink and dope, once-famous professional people and ex-rich now "down on their luck," psychopathics of every conceivable variety, miserables who seek refuge in the company of one another, and highly diverting foreign colonies—there are a "daily dozen" stories in every block.

Chinamen, negroes, Poles, Italians, immigrant Hebrews, Persians (here is the largest Assyrian Persian colony in America—they migrated, like the Pilgrim Fathers, because of religious persecution), tramp Greeks, Scandinavians and Germans clinging stubbornly to the land that once they lorded, and the unfathomable Sicilians all colonize this most cosmopolitan of slums.

'Midst these alleys and gas-jets the newsman can watch the pot melting, he can see Americanization in process. Barriers centuries old are battered down, cultures are dissipated, and it all washes up into something new and highly problematical.

Second-generation problems, in particular, stir the newsman's imagination. Children of immigrants find themselves outcasts. If they stick to Old World patterns, they are teased at school. If they come home from the playground with new habits, they are scolded at home. So they gang together. Thence, gangland.

Driven by force of circumstance into anti-social tendencies, they soon begin to capitalize on their united strength, their new-found power, and their youthful bravado. The newsman can smell headlines in the offing.

Of the adhesive foreign groups the advertising man knows little, because all but a few specialists think the task of reaching them with printed English fairly hopeless. But newsmen are intrigued by colonies such as the Sicilian (which lies not more than a mile northwest of Streeterville, with its McKinlock campus and Drake hotel).

Here smolder the hates which flare up into murders and small massacres, leaving ashes of unsolvable mysteries. Your newsman likes to poke about in these ashes, hoping some day to uncover the prize story of the year.

Little Sicily is governed by a code all its own, one we cannot understand. They can't understand ours. Their domestic virtues are of the highest, their gambling the most shameful, their poverty the most disgraceful, and their close-mouthedness the most proverbial of all the foreign groups. And their "death corner" (Oak and Cambridge) probably holds the world's record as a site of unsolved murders.

* * *

Climbing Youth

Between the slums and the fashionable Lake Shore drive area, however, is a district which interests advertising men greatly. It is peopled with dissatisfied youth. That's what advertising tries to create: dissatisfaction and desire.

In adaptations of once proud old residences (conveniently near the Loop) room thousands of young men and women, largely unmarried (although cohabitation is not uncommon) who clerk, take dictation, and hold down menial "white collar" jobs. It is significant that the lodging houses in this district advertise, on window cards, "sleeping rooms."

They have few children, spend little for the necessities. From their small margins they make expenditures for little luxuries they read about in current advertising.

Because the opportunities for excitement, for tasting the myriad sauces of life, are so manifold in the city, these youngsters hang on and on, preferring discontent and sometimes desolation to the paucity of small town living.

It's a transient population. Constantly they are trying to move up and out. The defeated move down and out. Others simply move. Their acquaintances are casual—easily made and quickly broken. Contacts are unconventional, thwarted, anonymous. Nursing unsalved egos, restless, cynical, impulsive, they are mostly easily reached by the "improve yourself" type of propaganda. Good market for many things. But not electric refrigerators!

* * *

The Gold Coast

Because of the advent of air conditioning, the Gold Coast of Chicago is once again interesting advertising men in the refrigeration industry.

Reaching into the society market is not a task to be undertaken lightly, or without intense study. The higher the caste, the more complex the rules, and the greater insistence upon their rigid enforcement.

Requisite No. 1 for membership in the elite is, whether the elite will admit it or not, money. That's what tempts sales-minded men. Stakes are high. Winnings make high risks worth taking.

Duesenberg, for instance, occupies an expensive showroom right at the gateway (Michigan Blvd. bridge over the Chicago river) to the Gold Coast. If a car a month would be sold from this showroom, the joy of the executives would know no bounds. But when they do sell a car, the price may be $20,000, or more!

But you must know the rules.

Yesterday's rules may be utterly *gauche* today. As everywhere else in America, integrated society is breaking down. It is not enough to get MRS. McCORMICK to adopt a new fad; it must be sold now to dozens of self-sufficient little cliques.

These Social Registerites are decidedly of the leisure class. They spend, rather than earn. They live on Lake Shore Drive, belong to a few exclusive clubs, travel to spots other Gold Coasters visit, do the things other Gold Coasters do. From a third to half their year is spent away from Chicago.

The thing onto which the advertising man may grab is the "social game." To be *somebody* it is necessary to *do* certain things, to *have* others. It's a fast and ferocious game, a game which rewards the winner with recognition.

If the advertising man can find something which will help the climer or the hanger-on-by-his-eyebrows improve his game, riches are his.

Clothes, grooming, appurtenances play an important part in the game. The market is big. But so unflinching are the rules that a single misstep may raze the social climber's house of cards, or a single left-handed advertising statement may label a product as bourgeois, or "bad form."

On the Gold Coast there are things one does, and things one mustn't do; places one goes, and places one avoids; clothes one wears, and clothes at which one smiles contemptuously. It's the job of the advertiser to get his product on the preferred list, and keep it out of the untouchable classification.

* * *

Sharp Contrasts

For the student of human reactions, be he sales manager, editor, politician, or dilettante, the Near North Side offers a study in sharp contrasts equalled by few sections in America.

It's a concentration of the unpatterned, of the assorted varieties, of strange neighbors.

The would-be artists and licentiates of Towertown, the smothered youth of the lodging houses, the hoboes, the stark slums, the embryo gangs, the cheap thrill-seekers, the law-unto-themselves racial groups, the strenuous-living Gold Coasters misnamed the "leisure" class—they're all here.

And not a normal individual in the lot.

* * *

What a Market!

Somewhere near 5,000,000 human beings are living intensely (within 21 integrated cities) on or near or of the world's largest fresh-water bodies, all dissatisfied or drivingly ambitious, all infected with the "world's greatest" virus—what a market!

Chicago paces the world in food packing, farm machinery, telephone instruments, musical instruments, electrical and gas products, furniture, and household devices. It is the world's greatest grain market, food distributing center, lumber market, leather market, railroad center, convention entertainer, retail department store center, has more parks, playgrounds, boulevards, etc., etc., etc.

The excellent street railway operates 3,700 cars over 1,000 miles of track, with supplemental elevated and motorcoach lines. Fast suburban railway service helps tie the gangling metropolis to the Loop, which has a bulldog grip on the whole section. Taxicabs are plentiful, fast, cheap (at present), and always quickly available except on Mondays—when business which lain dormant over the week-end is resumed with a bang.

Chicago is a natural hub for airlines. More than a score of airports serve the city, and the whopping big Municipal Airport out on Cicero Ave. is one of the busiest flying fields in the world.

Transportation, you can see, is no great problem—even though the worst feature of the city is the length of time it takes to get from one place to another, because of the London-like vastness and spread of the city.

Because it grew in less than a century from an Indian scalping ground to the fourth largest city in the world, Chicago has become one of the most-talked-about cities of the globe.

As far back as 1870, BISMARCK is said to have pronounced: "I should like to visit America, if only to see that Chicago."

Two world's fairs, a hell of gang warfare, a honeycomb of rackets, the empire of SAMUEL INSULL, the fame of merchants like LEITER and MARSHALL FIELD, the exploits of families like the McCORMICKS—all these helped a publicity-minded city gain fame.

Great Lakes Naval Training Station and Fort Sheridan lend the prestige of "buttons" to the city. Its 46 libraries are wells of information from which scholarly background is drawn for the ideas constantly springing from the up-and-comers. Its 33,000 acres of forest preserves provide facilities for a return to the soil and the trees and stars, for renewal of vision . . . We could go on for hours.

From the standpoint of natural resources for metropolitan living, Chicago is rich. But from the standpoint of human resources, it has a wealth which can be likened only to the material empires of a Ford, a Rockefeller, or a Mellon. It has hundreds of thousands who think, believe, and insist that Chicago is destined to become the most important city on earth!

Intoxicating is the excitement of Chicago, its swift pace, its air of going somewhere. It is the City of Youth, a city of inspiration and action, a city of speed, and—above all—a city of change.

You can sell a complete

GENERAL ELECTRIC KITCHEN

for as little as $600.

THIS complete kitchen sells for only $600 and your customer can spread the payments over a 2-year period.

Widespread interest has been developed in the complete General Electric Kitchen. Wherever it is displayed it wins prospects and sales. At the G-E exhibit at A Century of Progress, hundreds have left their name and address to be forwarded to local G-E dealers. There's a *big* growing market for the complete General Electri.. Kitchen and it can be sold on the step-by-step plan for as little as $9 a month. Your customer purchases one unit at a time —a G-E refrigerator, range or dishwasher— soon acquiring the entire kitchen. It makes a strong selling story for each of the G-E appliances and makes profitable sales more easy the year 'round. It makes possible more than just one sale to a prospect—it provides a chain of profits.

G-E dealers call the General Electric Kitchen the greatest sales stimulator in electric appliance history. Women who see and hear about it are never satisfied until they have one in their home. It draws prospects and creates sales for all G-E kitchen appliances. General Electric is spot-lighting the G-E Kitchen before millions in a great nation-wide sales promotion campaign. G-E dealers are reaping the benefit— more prospects, more sales, continuous profits —a progressive, permanent business. General Electric Co., Specialty Appliance Sales Dept., Section DF82, Nela Park, Cleveland, Ohio.

GENERAL ELECTRIC

REFRIGERATORS • RANGES • DISHWASHERS

AIR CONDITIONING

YORK MACHINES COOL TIME-FORTUNE BLDG.

CHICAGO—To furnish summer comfort for visitors to the Time-Fortune Pavilion at A Century of Progress here, an air-conditioning system has been installed by York Ice Machinery Corp. The Time-Fortune building is supposed to be the only air-conditioned structure at the Fair that was erected solely to furnish rest and relaxation to visitors.

The cooling system provides complete control of both temperature and humidity with York floor-type units delivering air through ducts and mains designed to harmonize with the interior decorative effects. The system employs a Freon compressor unit, driven by a 30-hp. motor.

More than 1,500 magazines and periodicals from all parts of the world are provided for free public use in the Time-Fortune Pavilion. The interior has been furnished as a reading room and lounge, with sofas, chairs, and writing tables. Between 13,000 and 15,000 persons visit the building each day.

DISPLAYING GLASS FILTERS

TOLEDO—Making the actual product part of its "Authorized Distributor" signs is the idea developed by the Owens-Illinois Glass Co. here to assist its distributors in promoting sales of Dustop glass-wool air filters.

50 Westinghouse Air-Conditioning Dealers Named

EAST PITTSBURGH — More than 50 dealers of Westinghouse air-conditioning equipment have now been appointed in the seven geographical sales districts of the United States, according to S. F. Myers, Westinghouse general supervisor of air-conditioning dealers, who is working toward an ultimate total of 500 dealers.

Only organizations which are equipped to do an overall job of selling, installing and servicing air conditioners are franchised.

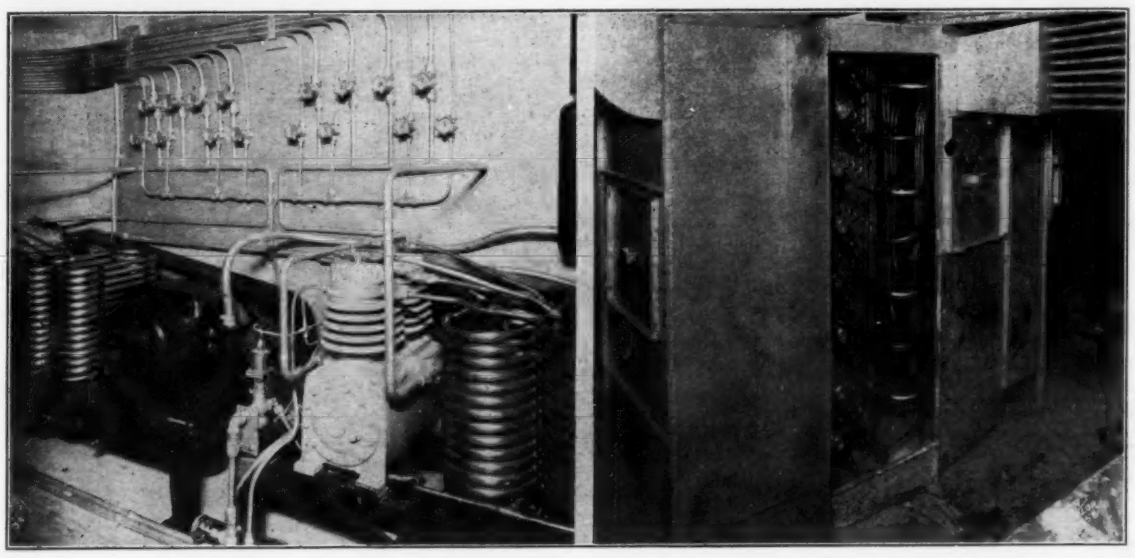
Sales instruction materials include prospect-finding suggestions, model sales presentations, slide films, proposal forms, and follow-up letters.

Cincinnati Brokers Buy Air Conditioning

CINCINNATI—General and private offices and the board room of Benjamin D. Bartlett & Co., (brokers) here have been equipped with Carrier air conditioning by the Harten-Knodel Distributing Co., distributor of Norge and Carrier products in this area.

Carrier cabinet-type cooling units are used in the private offices, while a concealed duct system supplies conditioned air to the board room and general offices.

Cooling a Funeral Parlor



Just installed by E. H. Schaefer Corp., Milwaukee G-E distributor, are two 5-hp. G-E condensing units (left) in connection with direct expansion coils (right) to condition air for distribution through ducts to Schmidt & Bartelt's funeral home. The system filters the air, as well as providing humidification in the winter months. Special attention was given to mounting the compressor and blower fan and to the duct construction, to obtain quiet operation required in the funeral parlor.

THREE G-E ROOM COOLERS SOLD IN NEW YORK

NEW YORK CITY—Three installations of General Electric room-cooling equipment have been made here recently—all of the units being sold by A. B. Salto of the commercial department of Rex Cole, Inc., G-E distributor here. One sale was to Horn and Hardart, another to Barr Bros., brokers, and the third to the Ozalid Co., Zeppelin Corp. of Germany agent.

Cooling Problems Similar to Heating, But with Additional Factors

By C. D. Graham, Air-Conditioning Engineer
Westinghouse Electric & Mfg. Co.

ON heating estimates there are usually only two sources of heat loss to be figured. These are radiation losses (losses through the building construction due to temperature difference between inside and outside), and infiltration (losses due to incoming air). This incoming air may be either natural leakage due to wind pressure or mechanically introduced air.

On cooling and conditioning estimates, however, there are other factors besides radiation and filtration, that must be considered. These are: sunlight gain, heat and moisture from people, moisture infiltration, lights, power, gas burners, etc.—in short, any source of heat or moisture gain.

Heating

To make an accurate heating estimate it is first necessary to determine the sq. ft. area of each type of exposed surface, such as glass, outside wall, floor, roof, or ceiling.

If there are two or more types of outside wall construction, the surfaces of each should be figured separately. Also, if there is a temperature difference on any interior partitions these surfaces should be figured.

By referring to heat transfer tables, the rate of heat transfer may be found for almost any type of construction. These tables give the transfer in B.t.u. per square foot per hour per degree temperature difference between the two sides of the material. (For example, the transfer through a 12-in. brick wall with ¾-in. plaster on furred metal lath is .25 B.t.u. If there were 500 sq. ft. of such a wall and the heating requirements were 0° to 70°F., the loss through that wall would be 500x.25x 70°=7550 B.t.u. per hour.

The sum of losses calculated in this manner for each type of construction gives the total direct losses due to radiation. To these must be added a sufficient amount to heat any incoming air from outside temperature to inside temperature.

One Air Change Per Hour

Where there is no mechanical ventilation (either supply or exhaust fans or ventilators) experience indicates that one air change per hour is a good average figure to use on industrial, residential and office buildings.

Where the proportion of windows and doors to the cubic space is small, this air change per hour can be reduced to ¾ or less and conversely when there is an abnormal chance for air leakage such as a large number of windows and doors or where doors are opened frequently, the leakage may greatly exceed one change per hour.

The engineer making the estimate must use his judgment on this point but never uses less than one-half air change per hour, or over two air changes per hour on well constructed buildings.

The following table should be of assistance in determining the proper air change to use. Bear in mind, however, that these figures are merely a guide and that sound judgment is preferable to hard and fast rules.

Rooms	Number of Air Changes
1 side exposed	1
2 sides exposed	1¼
3 sides exposed	1½
4 sides exposed	1½

Where the room is to be humidified, sufficient heat to vaporize the moisture must also be introduced. The latent heat of water vapor at normal room temperatures is approximately 1050 B.t.u. per pound, and assuming that the entering water temperature may be as low as 40° this would mean about 1080 B.t.u. per pound of water evaporated.

A pint of water weighs 1.04 pounds so when working in that unit the figure becomes 1125 B.t.u. per pint. An average room of about 3000 cu. ft. volume will normally require about 1 pint of water per hr. in order to raise the inside humidity 10 or 15%. It is seldom advisable to do more humidification than this because windows may sweat excessively if the inside dew point is raised too high.

The sum of the heat loss by radiation and the heat required for incoming air (usually infiltration) and the heat required for humidification gives the total heat loss. To this should be added a reasonable factor of safety (usually 10%) and equipment selected to give that total amount of heat.

Cooling

Cooling is the reverse of heating but the mechanics of estimating are very much the same. In heating, the heat liberated by people, lights, etc. or the heat due to direct sun rays cannot be deducted from the heating requirements, for a room or building must be heated under all conditions and such help cannot be counted upon at all times.

When cooling, however, the equipment must have capacity to maintain the desired temperature even when the space is occupied, lights are on, or when the sun is shining on walls, roof, etc.

Therefore, in addition to radiation and infiltration a cooling estimate must also include any other sources of heat as well as any sources of moisture.

For comfort cooling, 10° cooling is generally sufficient, unless the customer requests figures on some other basis. In selecting the equipment, particularly on small rooms, it frequently will develop that equipment to meet the estimate is not available exactly.

For instance, one unit may be a little shy in capacity and give say only 8° or 9° cooling, while two units of that size or one of the next larger size may give 14° cooling. It is then necessary to exercise the proper judgment and to select the capacity that best suits the needs; weighing the cost of the additional equipment against the amount of cooling desired.

8 to 12 Degree Cooling

On larger rooms where several units are required, the addition of one small unit seldom makes more than 2° or 3° difference in room temperature. In general, 8° to 12° cooling is about right except in the South where 10° to 15° is a better average temperature reduction.

The capacity of the surface-type air-conditioning units (room coolers) is to a large extent independent of the moisture load. It is, therefore, necessay to figure cooling on a sensible heat basis (for selecting room coolers) and then add the latent or moisture load before selecting the compressor.

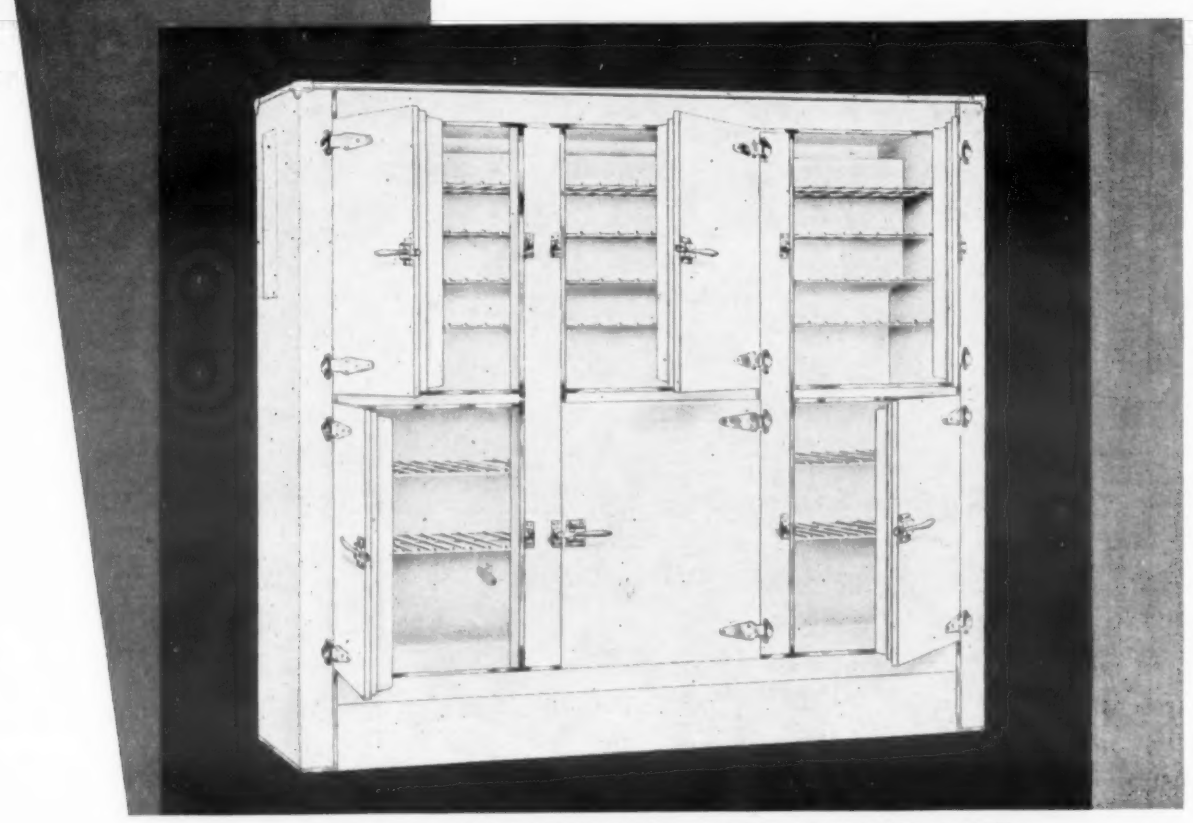
Stated another way, the cooling unit (evaporator) is selected on a sensible heat basis, but the refrigerating machine is selected on a total heat basis.

NORGE USING PROJECTORS

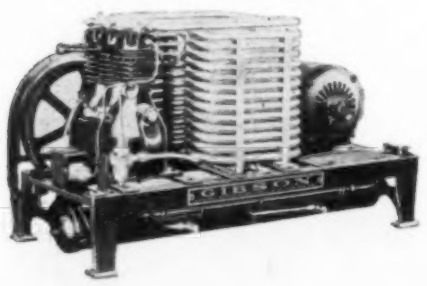
DETROIT—Small projectors similar to the once-popular stereoptican are being introduced by Norge Corp. to its retail salesmen for use in illustrating Norge features to prospects during sales presentations in the home.

FOR EVERY COMMERCIAL REQUIREMENT.....

MEAT MARKETS
GROCERY STORES
RESTAURANTS
DELICATESSENS
FLOWER SHOPS
APARTMENTS
HOTELS
AIR CONDITIONING
BEER COOLING
WATER COOLING
MILK COOLING
ICE CREAM HARDENING
ICE CREAM MANUFACTURING
TRANSPORTATION



COMPRESSORS
1/4 H.P. to 10 H.P. Capacity



ENGINEERED TO FIT THE JOB Gibson provides COMPLETE electric Refrigeration for EVERY Commercial requirement. Backed by over 50 years of knowing how, these cabinets represent the greatest advancement in Commercial Cabinet Construction.

Quality materials, careful construction and inspection, and scientific installations effect a continuous saving through years of trouble-free, economical operation. The Gibson franchise is a money-saving, profit-making investment.

Write or wire for complete information.

GIBSON ELECTRIC REFRIGERATOR CORPORATION
Greenville - Michigan

GIBSON COMMERCIAL REFRIGERATION

THREE CHEERS FOR A GREAT JOB BY A GREAT DEALER ORGANIZATION

FOOTBALL fans will never forget those "Point-a-Minute" teams that "Hurry-Up" Yost turned out during his first days at Ann Arbor. "Greatest scoring teams of all time," say the experts.

But here's to an even greater team—made up of Kelvinator distributors, dealers and salesmen. *They've averaged a Kelvinator a minute,* twenty-four hours a day every business day, week after week during the spring and summer of 1933.

Look at the figures: Greatest April shipments of any month in Kelvinator's 19 years in business. Then an even greater May—43,357 units shipped. Then June—44,525 units. July—330% gain over July, 1932. August—well on the way to another record.

Sales on water coolers have increased. Milk cooling equipment sales are up. Dealers are making more and more money on Kelvinator beer cooling equipment. The new Continuous-Fin Coil for florists, grocers, meat merchants, restaurants and all types of commercial installations is recognized as the finest coil ever developed—and sales prove it.

Yea, team! All together for a rousing cheer for the finest organization in this fine industry!

✡ ✡ ✡

KELVINATOR CORPORATION

14245 Plymouth Road, Detroit, Michigan. Factories also in London, Ontario, and London, England.

(K-746)

Kelvinator

INTERVIEWS

BY ELSTON D. HERRON

Mr. Rodman's Air Conditioner

Among the dozens of persons now working on air-conditioning systems are C. A. RODMAN and HOWARD C. BLAKE of Detroit, who say they have completed designs for conditioners which may be used for cooling residences, commercial establishments, steamship cabins and saloons, railway coaches, passenger automobiles, and airplanes.

In the refrigeration system designed by Mr. Rodman for air conditioners, some sections of the evaporator will be insulated. This, says Mr. Rodman, will cause the refrigerant (methyl chloride) to condense partially during its flow.

As we understand it, a certain quantity of refrigerant will be released into the evaporator through the expansion valve, and will cool only alternate sections of the evaporator.

When the second slug of refrigerant is released into the evaporator, cooling will take place in those sections which were warm during the first cycle, and moisture collected by the coils during the first cycle will pass back into the air.

In the past, Mr. Rodman has been connected with General Electric Co., Pacific Gas and Electric Co., Electro-Kold Corp., Trupar Mfg. Co., and S. F. Bowser & Co., Inc., of Fort Wayne, Ind., he told us.

Mr. Blake is a civil and construction engineer who supervised erection of Detroit's Fisher building, Michigan Theater, and Detroit-Leland hotel.

* * *

Price Still a Factor

Whenever your reporter wants to find out something about what de-department stores are doing in refrigeration, we usually go down to the J. L. Hudson Co. here in Detroit and have a talk with J. B. OGDEN, manager of that store's big electric appliance department.

We enjoy talking to Mr. Ogden because he's one department store executive who always gives us plenty of facts and figures unless there's some extra special reason for not doing so.

Last week, we chatted together for 15 minutes about department stores' refrigeration business this season, and Mr. Ogden said that although department stores haven't sold an amazingly large volume this summer, refrigeration has been far from a losing item for them.

May and June refrigeration sales at Hudson's were far ahead of those for the same months last year. July was about the same as in 1932, and August sales are above those of August last year.

Price is still a potent factor in refrigeration selling at Hudson's, and Mr. Ogden has found that advertisements emphasizing low prices are—as last year—the best prospect pullers. Average sale price of electric refrigerators at Hudson's this season has been about $145. Five- and 6-cu. ft. models have been the best sellers.

Mr. Ogden is just back from a trip to Chicago, Akron, and Cleveland, where he visited appliance department managers in those cities' department stores. He found that refrigeration sales in those stores have been about the same as in his own.

In Akron, he found that M. O'Neil & Co. had installed a new plumbing and heating department, as had the May Co. in Cleveland. NELSON WRIGHT, May's appliance manager, reported that his store's refrigeration sales in June had been particularly good.

* * *

Ironers Are Coming Into Their Own

Manager Ogden believes that sales of electric ironers are going to show a very substantial increase from now on, and will be the source of a nice profit for appliance and department stores. Hudson's moved more ironers in June of this year than in any month since the store's anniversary sale in 1931.

Two busiest places in Hudson's appliance department the day we visited there were a couple of spot displays—one where a home economist was demonstrating the Du-Wa refrigerator deodorizer, the other where a demonstration of new "electric spoon" was going on.

This spoon is being made by Detroit's Handy Heater Co., works on alternating or direct current, and boils foods when it is placed in the container with them just as an ordinary mixing spoon might be left in a pan or dish. When not in use as a kitchen appliance, the spoon can be used to iron handkerchiefs or for skin massages.

* * *

Inquiries

Last month, the advertising men's magazine, *Tide*, carried the following note on the General Electric display at A Century of Progress:

"Majority of inquiries at the General Electric exhibit (which was not designed for aggressive selling) are on air-conditioning equipment and the three major kitchen appliances—refrigerator, range, dishwasher. Thought-provoking development: there has been an abnormally high interest in home appliances on the part of men."

* * *

Henry Has Returned; Mr. Larkin is Happy

Last week, JACK SCHAEFER and your reporter had just come from a half-hour's visit at the Book-Cadillac Hotel with H. A. GLASSER and J. HARRIS of Bruno-New York, Inc., Gibson distributor in New York City, and were sitting at the soda fountain in the hotel, when LESTER V. LARKIN, vice president of Larkin Refrigerating Corp., walked in.

He was in town just for the day, and had been so busy he hadn't taken the time to eat. (It was 4 p. m. when we saw him). He had some nice things to say about ELECTRIC REFRIGERATION NEWS, told us that his company's advertisement in the Aug. 9 issue on the new Larkin bottle beer coil had pulled a fine bunch of inquiries. (Mr. Mateer, please note).

With the compliments over, Mr. Larkin got down to the serious business of telling fish stories. He confided that he has been very happy during the past few weeks, for Henry has returned.

Henry, you may recall, is the wonder fish living in a clear pool near Wakaulla Springs, Florida, which answers Mr. Larkin's call and climbs over a partially submerged log at his master's bidding.

Some time ago, high water covered that part of the country, and for two weeks Henry failed to answer the call of the darkie who discovered him. But not long ago Henry came home again. Mr. Larkin was notified immediately, and now in his heart there is great rejoicing.

* * *

Health, Refrigerators, And Morticians

One day last spring in Muskegon, we had a talk about dealers with GEORGE LEHLEITNER, industrious young sales manager in the Norge refrigeration department of Stauffer, Eshleman & Co., Ltd., New Orleans distributor.

George takes a lot of pains in picking his dealer organization, says it's one of the best in the whole country. He mentioned that one of his very finest retailers was a mortician (Teer Co.) in Eunice, La. "It doesn't matter what other business a man's in if he can sell refrigerators," was George's comment.

Last week, we found someone who disagrees with Manager Lehleitner. That someone is W. B. MUSE, manager of the refrigeration department of Buhl Sons Co., Detroit Leonard distributor. A day or two before we called, Mr. Muse had cancelled a contract with one of his 80 dealers—a mortician. Reason: not enough sales.

"There are two reasons why a mortuary doesn't make a good refrigerator dealership," opined Leonardman Muse. "In the first place, an electric refrigerator's biggest selling point is its health-protecting qualities. And I've never seen the person who thinks a mortuary is especially suggestive of good health.

"Secondly, the very backbone of refrigeration selling is the idea of *going out after business*. A mortician doesn't work that way. He's been trained from the very start to sit and *wait for business to come to him*. It's pretty hard to combine these two ideas and have both branches of the business successful."

Buhl Sons Co. has just taken on the Standard Electric range line and the Conover dishwasher line. The company thinks that at least 50 per cent of its refrigerator dealers will handle these products, and sell them as units of an all-electric kitchen.

* * *

Norgemen Know Their Norsemen

Norge Corp. claims to be the only manufacturing organization in the refrigeration industry that has a department of mythology.

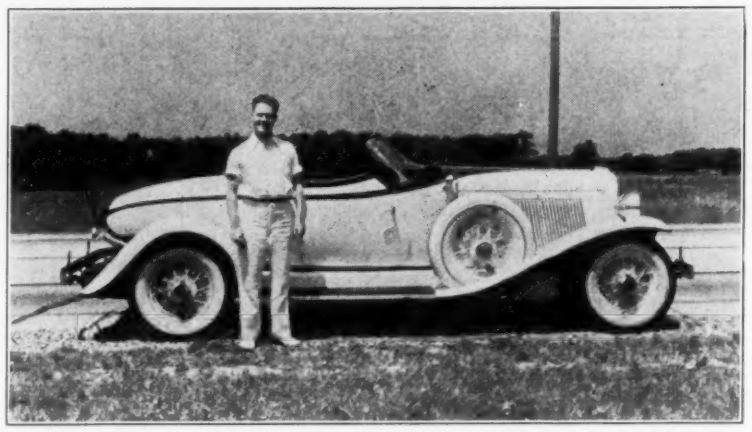
It all started last January when JIM STERLING, advertising and sales promotion manager, organized the Viking Club for star performers in the ranks of Norge retail salesmen.

Then special divisions were made in the honor club for other members of the Norge sales forces. The divisions had to be named—appropriately. And the only way to find good names was to study up on Norse mythology. That job settled on Jim and his assistants.

Result: there is an Ymir Lodge for distributors and factory reprensentatives, a Thrythm Lodge for distributor salesmen, a Volsung Lodge for apartment house salesmen, and a Jarl Lodge for retail men.

And if you think members of the Norge advertising and sales promotion department can't handle the trick pronunciations of those names, just step up to one of them and ask him casually for an outline of the Viking Club setup.

'The Yellow Peril'



Anent the above, Howard E. Blood, president of Norge Corp. and amateur photographer par-excellence, writes to George Taubeneck as follows: "Dear George: Herewith is a snap-shot of you and your car taken en route from Chicago to Detroit. I hope your modesty will not prevent your publishing this in the NEWS, as the industry will, I am sure, be very much interested to see how news flies."

INVENTORS' CONVENTION WILL BE HELD SEPT. 30

DETROIT—Inventors of all manner of things will meet in Detroit's Statler hotel on Sept. 30 for the opening of the annual convention of the American Society of Inventors, dates of which coincide with the World's Most Unusual Exposition, to be held Sept. 30-Oct. 8 in the Convention Hall here.

Attending the convention at the Statler, besides inventors, will be craftsmen, antique collectors, and hobbyists from all parts of the country. At the exposition will be shown models of various inventions, collections of curios, and the handiwork of a number of crafts. Both the convention and the exhibition will be open to the public.

Home Economist Joins Westinghouse

JACKSON, Miss. — Mrs. Kenneth Smith has recently taken over the home service department of Mississippi Power & Light Co. here, and will give particular attention to promotion of Westinghouse refrigerators, ranges, and other cooking appliances.

Her previous experience includes graduation from Georgia State Teachers College where she majored in home economics, two and a half years as a teacher of the subject in Georgia junior high schools, and seven years doing home demonstration work with the Mississippi Extension Department, a branch of the U. S. Department of Agriculture.

In July, Mrs. Smith paid a visit to the Westinghouse factory kitchen in Mansfield.

SIX MORE DEALERS ADDED BY CROSLEY DISTRIBUTOR

NEWARK—Six new dealers have been added to the retail organization of the Appolo Radio Co., Inc., Crosley refrigerator distributor here. They are: Henninger Sales Co., Ridgewood, N. J.; General Supply Co., Hackensack, N. J.; Jacobs Brothers, Harrison, N. J.; Vincent Smith, Lambertsville, N. J.; Giannone Electric Co., Hawthorne, N. J.; Bronstein Brothers, Linden, N. J.

The distributing company sold more Crosley refrigerators during the four days of August than during all of August in 1932, according to Fred Goldberg, treasurer.

SPOKANE'S '33 SHOW DRAWS 5,000 PEOPLE

SPOKANE, Wash.—Eight exhibits by refrigerator and range merchandisers and afternoon lectures on the use of these appliances brought 5,000 people to Spokane's three-day 1933 Electrical Refrigeration and Cookery show held in the Davenport hotel here recently.

Ross B. McElroy, merchandising sales manager of Washington Water Power Co., was in charge of arranging the show, in which the Spokane Electric Refrigeration & Cookery Council cooperated. Mrs. Carl Hoffman, retiring president of the local Federation of Womens Clubs, acted as hostess.

Advertising in newspapers, on street cars and buses, by fender signs, and over the radio helped to increase the attendance. Dealer and distributor advertisements featured the show trademark.

Speakers included John A. Clark, Pacific Coast sales promotion manager for San Francisco's radio station WESCO, explaining "The Principles of Electric Refrigeration"; Evelyn H. Roberts, research specialist in home economics, Washington State College, speaking on "Economical Electric Cookery"; Florence Harrison, dean of the department of home economics, Washington State College, on "What to Eat and Why"; Harriet K. Allen, radio home economist, Washington Water Power Co., on "Oven Meals"; Mamie Johnson, dietitian for the Dessert hotels, on "Diet for Overweight and Underweight"; and Lucille Ramirez, home economist, Washington Power Co., on "Cold Cooking."

Nema Distribution Of June Sales By States

Corrected report issued by the Refrigeration Division of Nema on Aug. 21, 1933. First report was published on the page 6 of the Aug. 2 issue of ELECTRIC REFRIGERATION NEWS.

STATES and Territories	Quantity of HOUSEHOLD Low Sides
Connecticut	2,458
Maine	900
Massachusetts	7,490
New Hampshire	657
Rhode Island	1,758
Vermont	443
New England Total	**13,706**
Delaware	344
Maryland & D. C.	6,507
New Jersey	7,401
New York (State)	27,278
Pennsylvania	18,256
Eastern Total	**59,786**
Kentucky	2,688
Ohio	12,863
West Virginia	3,202
East Central Total	**18,753**
Alabama	1,053
Florida	1,189
Georgia	1,943
North Carolina	2,355
South Carolina	874
Tennessee	1,248
Virginia	2,948
Southeastern Total	**11,610**
Illinois	11,839
Indiana	5,057
Michigan	6,024
Wisconsin	2,433
Great Lakes Total	**25,353**
Minnesota	2,278
North Dakota	349
South Dakota	476
North Central Total	**3,103**
Iowa	2,793
Kansas	2,335
Missouri	6,986
Nebraska	1,514
Middle West Total	**13,628**
Arizona	215
California	7,224
Nevada	142
Pacific Coast Total	**7,581**
Idaho	508
Montana	645
Oregon	1,208
Utah	1,195
Washington	1,150
Northwestern Total	**4,706**
Colorado	1,528
New Mexico	266
Wyoming	278
Rocky Mountain Total	**2,072**
Arkansas	884
Louisiana	1,089
Mississippi	419
Oklahoma	2,026
Texas	5,539
Southwestern Total	**9,957**
Total United States	**170,255**
Total Canada	1,367
Other Foreign (Including U. S. Possessions)	3,928
Total for World	**175,550**

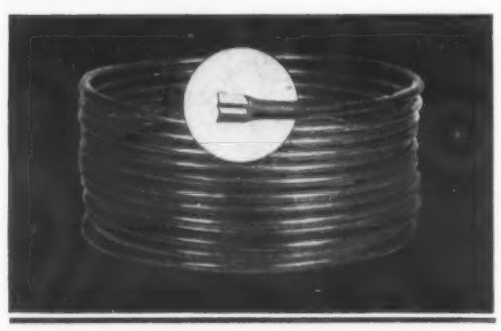
WOMAN LIKES FROMAN; BUYS FRIGIDAIRE

ST. LOUIS—The "sales appeal" in Jane Froman's voice brought an immediate sale for Schroeder Brothers Ice & Fuel Co., Frigidaire dealer in Manchester, Mo., recently, when Mr. and Mrs. H. C. Boemler, Eureka, Mo., listened to Miss Froman on the Frigidaire radio hour, then drove to Manchester, got the dealer out of bed and bought.

They paid cash for their new refrigerator, according to H. L. Fitzwilliam, sales manager of Del Home Light Co., distributor for Frigidaire here.

Best for ... BENDING

NRA MEMBER U.S. WE DO OUR PART



There's many a tight place in Commercial Installations

where a uniformly annealed tube saves worlds of time and makes a tighter, neater job. The precision, electric annealing of Wolverine guarantees you the best bending seamless, copper tubing—every inch of every bend is just the same.

IMMEDIATE DELIVERIES

25, 50 and 100 ft. coils, plain or tin plated, dehydrated and sealed or open end. Longer lengths to order. WOLVERINE TUBE CO., 1491 Central Ave., Detroit, Michigan. Sales Offices in 29 cities. Export Dept, H. M. Robins Co., 120 Madison Ave., Detroit

WOLVERINE
Seamless Copper Tubing
For Refrigeration

MRS. WHITE BRINGS BOB A PROSPECT

HONEY, WHY DON'T WE GET AN AUTOMATIC REFRIGERATOR?
NOTHING DOING! TOOK FRANK 10 MINUTES TO JAR LOOSE A FEW ICE CUBES LAST NIGHT. I'D RATHER CHIP ICE OFF THE OLD-FASHIONED 50 POUND BLOCK. IT'S LOTS QUICKER AND EASIER.
BUT GEORGE! ALL THE GOOD REFRIGERATORS HAVE FLEXIBLE RUBBER TRAYS NOW. YOU LIFT THE ICE CUBES RIGHT OUT. THEY CAN'T STICK!
I'VE HEARD OF THOSE NEW TRAYS. WONDER IF THEY'RE AS GOOD AS THEY SAY THEY ARE?
WELL, LET'S FIND OUT. MEET ME DOWN TOWN TOMORROW AND WE'LL TAKE A LOOK AT THEM.
ALRIGHT, I'LL DO IT! I'M OPEN MINDED.
NEXT DAY
AND ASIDE FROM ALL THESE FEATURES, MR. WHITE, EVERY MODEL IS EQUIPPED WITH FLEXIBLE RUBBER TRAYS AND GRIDS. THEY LET YOU GET ICE CUBES AT THE REFRIGERATOR INSTEAD OF OUT OF THE KITCHEN SINK—
H-M-M-M. WORKS BETTER THAN I THOUGHT! CERTAINLY A GREAT IDEA.
SEE-ONE AT A TIME OR THE WHOLE TRAY FULL. SAVES ICE, TOO. YOU LOSE ABOUT 25% OF THE ICE MELTING CUBES OUT OF OLD-FASHIONED TRAYS.
WELL, I'M SOLD. WHAT DO YOU SAY, HELEN? SHALL WE GET THIS MODEL?
THAT'S THE ONE I LIKE BEST.
A WISE CHOICE, DON'T FORGET IT'S GOT EVERYTHING — INCLUDING FLEXIBLE RUBBER TRAYS AND GRIDS.

Sales Come Easier When You Sell Refrigerators Equipped With Flexible Rubber Trays and Grids

EVERYBODY KNOWS A REFRIGERATOR ISN'T MODERN WITHOUT THEM

Flexible Rubber Trays and grids are no longer a luxury—no longer regarded as "gadgets." Far from it. In the past three years, Flexible Rubber Trays and Grids have become so amazingly popular that *more than 2,000,000 have been sold!* As a result, they're now used as standard equipment by all leading refrigerator manufacturers.

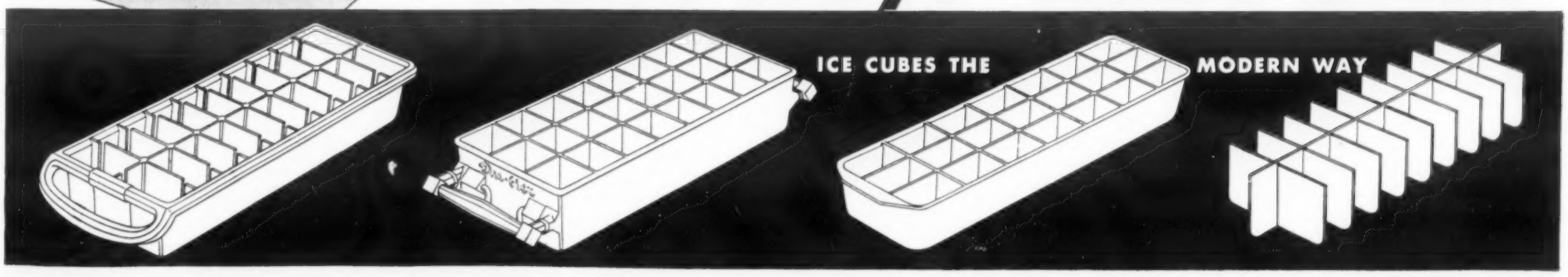
Aside from making your refrigerator easier to sell, Flexible Rubber Trays and Grids make wonderful "door openers" for your salesmen. And sold as accessories they create important extra profits.

This is *fact*, not fiction. And any refrigerator dealer or salesman who has had any experience will tell you the same thing. He'll tell you that without Flexible Rubber Trays or Grids, you can no longer call a refrigerator really modern.

Thus, it will pay you to insist that Flexible Rubber Trays and Grids be included as standard equipment in all the refrigerators you sell. By so insisting, you'll sell *more* refrigerators—and sell them *easier*.

Write today—to the manufacturer of your refrigerator or direct to us—and get full details about these new money-makers. And be sure to stock Flexible Rubber Trays and Grids without a moment's unnecessary delay. There's real money in them. The Inland Manufacturing Co., Dayton, Ohio.

Flexo Trays • Flexo Grids



Quickube tray

The Quickube Tray is made exclusively for Frigidaire. It releases ice cubes instantly—one at a time or a whole trayful—with just a slight pressure at the bottom of the tray.

Duflex tray

The Duflex Tray, made only for General Electric, combines flexibility with rigidity by means of stainless steel reinforcing bars. Cubes are instantly removed at a finger touch.

Flexo tray

The Flexo Tray shown here is a flexible rubber tray, used as standard equipment by Kelvinator, Leonard, Sparks-Withington, Mayflower, Williams, Apex, and many others.

Flexo grid

This newest Inland invention combines fast freezing with easy removal of ice cubes. Flexo grids are now standard equipment on Frigidaire, General Electric and Westinghouse.

U. S. SALES METHODS SUCCEED IN FRANCE

DAYTON—American merchandising methods are "putting across" American-made products in France in a manner that was impossible with the methods that French merchandisers have been following for years, according to M. Henri Meurisse, Frigidaire dealer at Lille, and a recent visitor at the Frigidaire plant here.

Making use of "cold canvass," M. Meurisse revolutionized selling methods, upsetting the French theory that it was the part of the dealer to sit in his showroom and wait for the customer to arrive.

Six Salesmen Working

M. Meurisse, studying American methods, decided to introduce them at Lille just about a year ago. The result was surprisingly successful. As a result, six salesmen are now operating out of the Meurisse establishment, three specializing on commercial equipment and three on household, all using American methods of salesmanship.

In France, M. Meurisse revealed, it is not a question of selling the housewife on the benefits of electric refrigeration over ice, it is a question of selling her on refrigeration, for the French housewife has not been used to using ice. Refrigeration has been practically unknown to her, but once she has been shown the benefits and convenience of refrigeration she is a ready prospect for an electric refrigerator.

Business Has Increased

Despite the falling off in business that has affected the entire world during the past three years, M. Meurisse declared there had been a steady increase in the electric refrigeration business in the Lille territory, and predicted a still greater gain in the next few years.

M. Meurisse was accompanied by M. Doom-Martel, who is associated with him in business in Lille. They have been visiting the United States as official guests of the American Legion, repaying a visit of the Legionnaires to Lille during the legion convention in Paris. After a visit to the Frigidaire plant in Dayton, they proceeded on to Chicago to spend a week at A Century of Progress exposition.

WESTINGHOUSE COOLERS IN GOVERNMENT BUILDINGS

WASHINGTON, D. C.—War and Navy Department buildings here have been equipped with seven Westinghouse MT-8 water coolers purchased for them by the Public Buildings and Parks Department of the federal government.

The Westinghouse Washington office made the sale, and Edgar Morris Sales Co., distributor here, installed the coolers in the building entrances.

Understand Your Product Thoroughly, Says New Westinghouse Book

MANSFIELD, Ohio—Based on the theory that "the man who knows most about his product is the man who closes the most sales," the Refrigerator Specialist, new booklet of sales information on the Master Series line, has been placed in the hands of its selling force by Westinghouse Electric & Mfg. Co. here.

The small manual is divided into two sections, first of which deals with the background of Westinghouse products and name. A history of the company, placed in the front of the book, emphasizes the sales value of a long-established name in the electrical industry. What electric refrigeration is, what it will do for the housewife and the family budget, what should be required in a good refrigerator, are important subdivisions of the first section.

Perhaps the most valuable part of the discussion takes up the development of the Westinghouse Master Series refrigerator. Step by step, with actionized pictures furnishing accompaniment, processes involved in manufacturing the refrigerating unit and the cabinet are set forth.

Chapter VIII, last in the first part, discusses competition.

"Selling Westinghouse Refrigerators with the Five Step Sales Plan" starts the selling side of the Specialist. Worked out with illustrations, the chapter coaches the salesman in all phases of selling Westinghouse refrigeration, from locating the prospect to closing the sale. Special chapters tell him about the value of the Westinghouse finance plan, and how to use the sales promotional helps available to him.

Believing that proper instruction in use of the refrigerator will do much to make the user a booster, writers of the manual have included tips on care of the box to be passed along to the purchaser. Some of the most interesting of these are:

"Before any food is placed in the food compartment, the entire interior should be thoroughly washed, to eliminate odors which are typical of all new cabinets . . . Use lukewarm water, with two tablespoons of washing soda to each quart. Wash every square inch thoroughly, including inside of the froster. Froster shelves and ice trays should be washed in hot soapy water, and rinsed in hot and cold water, then the outside dried."

"Lacquer cabinets wear better, and are easy to keep looking their best, if a light coat of wax is applied, and then thoroughly polished. This not only preserves the finish of the lacquer, but makes it easier to keep the cabinet clean. Finger prints do not show as readily on the gloss surface."

On food arrangement: "There are four classes of foods which are hardest to keep fresh and sweet: milk, meat and fish, left-over creamed foods, and gravies. They should therefore be kept in the coldest portion of the cabinet."

"The circulation of the air in the electric refrigerator has a tendency to dry the surfaces of foods. Such foods should be kept covered, either in a crisping pan, in cellophane bags, in dishes or bowls covered with wax or parchment paper or aluminum foil. Green vegetables should be washed and trimmed before being stored. Keeping non-edible portions cold is a waste of space, and of money. Salesmen should discourage the use of the wet lettuce bag, because the moisture is absorbed from the lettuce as well as the bag."

"Meats should be unwrapped, and placed on plates. For long storage it should be lightly covered. Large quantities of butter may be stored on the back of any of the lower shelves, out of the way. Butter which is being used should be kept on one of the upper shelves, where it will not become too cold for convenient use, either on the table or for cooking."

"Fruits or other foods with strong odors should go on the upper left, to prevent the circulation of their odors through the food compartment. When stored as directed, any odors picked up will be deposited directly on the froster, without chance of affecting other foods."

"Discourage the use of large plates or platters on the shelves, or of paper bags filled with food. Large articles should be stored on the bottom of the food compartment, where they cannot impede circulation. Proper storage not only keeps foods better and longer, but keeps operating cost down because the cold air circulation is not impeded."

Defrosting the refrigerator is carefully explained, and tips given on freezing of ice, use of the triple service tray, and preparation of frozen desserts.

Review questions at the end of each chapter help to clarify and emphasize important points.

KELVINATOR DISTRIBUTOR HAS NEW DEALERS

DAVENPORT, Iowa — Five new dealers have been appointed by Mueller Lumber Co., Kelvinator distributor in this territory.

McKinley & Hummelgard, Clinton, Iowa; Refrigeration Sales & Service Co., Keokuk, Iowa; Parker's Electric Shop, Burlington, Iowa; Henry Hartman, Savannah, Ill.; and Jacobs Electric Shop, Marengo, Iowa, are the new dealers.

SAFETY COUNCIL TO CONVENE OCT. 2-6

CHICAGO—Executives of industrial refrigeration, cold storage, and ice-making plants will discuss safety probproblems in refrigeration plants during sessions of the Refrigeration Section of the National Safety Council, as a part of the Twenty-Second Annual Safety Congress and Exposition to be held at the Stevens Hotel in Chicago from October 2 to 6.

The general chairman of these sessions will be L. W. Dawley of the Southern United Ice Co.; and the secretary will be Edward H. Fox of the National Association of Practical Refrigerating Engineers.

At the first session of the Refrigeration Section, on Wednesday morning, October 4, there will be "Resume of Year's Activities" by General Chairman L. W. Dawley. A. L. Blatti of the Railways Ice Co. will discuss "Safe Operation and Maintenance of Pressure Lines and Vessels in the Refrigeration Industry."

Electric of officers is next on the program, followed by discussions of "Safety in the Delivery of Ice" in 20-minute talks from the viewpoint of "Wholesale" by A. O. Wilson, director of the Artificial Ice Co.; and from the viewpoint of "Retail" by L. T. McArthur of the Peoria Service Co.

At the Thursday morning session, the topic "Safety in Harvesting and Storing of Ice" will be discussed by F. W. Braun, manager of the Safety Engineering Department of Employers Mutual Liability Insurance Co. The topic 'Safety in Cold Storage Operations" will be discussed by a speaker to be announced. George A. Knoll of the Mine Safety Appliances Co. will discuss "The Proper Use and Care of Respiratory Equipment in the Refrigeration Industry."

Buffalo Kelvinwoman Wins Prize

DETROIT—Earning of 102 tickets in the first furlong of the Kelvinator home economics Derby being run in connection with the annual Kelvinator sales contest this year entitled Norma Niehoff of the Buffalo branch to first prize in this event.

The prize was a zipper ring binder with Miss Niehoff's name on it.

Twenty-eight home economists in Kelvinator branches, distributorships, and utilities throughout the country are competing in the Derby, which closes September 16. At the middle of the second furlong the standings were Angela Allen, of Raymond Rosen Co., Philadelphia, leading with 189 tickets; Norma Niehoff, Buffalo Kelvinator, second with 149 tickets; and Roxie Speed, Thurman & Boone, Roanoke, Va., third with 147.

NRA MEMBER U.S.
WE DO OUR PART

ANNOUNCING an Added Service To Advertisers in the Beer Cooling Equipment Directory & Handbook

AS a part of our program of cooperation with President Roosevelt in promoting the aims and purposes of the National Recovery Administration, we have decided to delay closing the forms for the new BEER COOLING EQUIPMENT DIRECTORY AND HANDBOOK for a period of three weeks (that is, until August 31), in order to give all manufacturers sufficient time to comply with the terms of the President's re-employment agreement and display the Blue Eagle insignia in their advertisements.

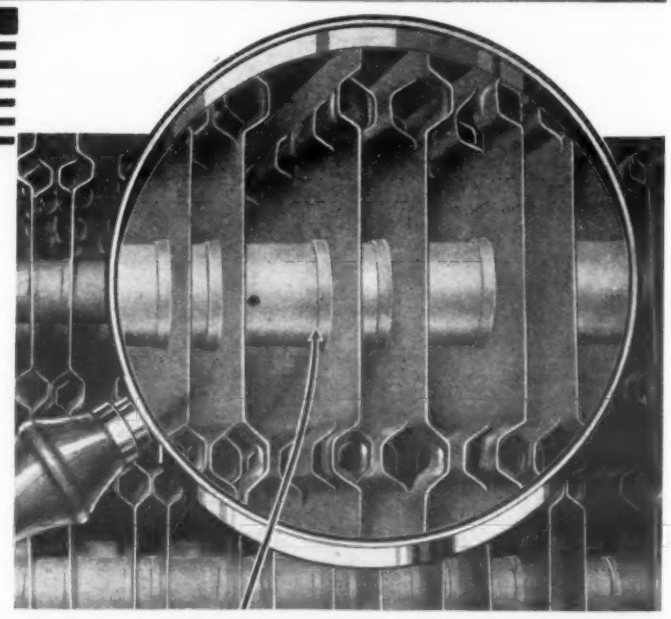
Since this new DIRECTORY will be in service for a considerable time, and since it will reach dealers and prospective buyers of equipment at a time when the attention of the public is being concentrated upon the Blue Eagle as a mark of distinction designed to influence the buying habits of the entire country, it appears highly desirable in the interests of all concerned that provisions be made for the proper recognition of this important movement.

Notice is hereby given to advertisers that we are authorized to reproduce the emblem in the advertisement of any employer *provided such employer files with this publication a written statement that he has signed the President's agreement and affixes the official NRA sticker thereto.*

In order to facilitate the required action, a convenient form will be mailed to all advertisers for filing the statement. Blue Eagle cuts will be furnished without charge to be inserted in advertisements for which copy or plates have already been transmitted to us. As a further service, we will print the insignia in *blue* in this DIRECTORY, if desired by the advertiser, *with no charge whatever for the extra color printing.*

Business News Publishing Co., Detroit, Michigan

Here is why
FEDDERS
NON-FROST
Commercial
Evaporators



Showing Metal to Metal Bond Between Copper Fins and Tubes

are not "Just Another Coil"

1. COPPER FINS Fused to Copper Tubes
2. RAPID HEAT TRANSFER
3. METAL-TO-METAL BOND between fins and tubes
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5. ELECTROLYSIS IMPOSSIBLE between fins and tubes
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CROMBIE TELLS HOW TO DISPLAY GOODS

(Editor's Note: This is the second of a series of reviews of Norge Corp.'s new sales education manuals prepared for the company's dealers and salesmen by James A. Sterling, advertising and sales promotion manager.)

By Elston D. Herron

How proper goods display can increase business, and how poor display will drag volume of floor sales almost to zero is the story told in the Norge sales training manual No. 2. Author Sterling has written it in the form of a letter from Distributor Crombie to his manager, Bob Gardner, in which the latter is told of what Norge has found in its merchandising "experimental department" at the factory.

The veteran merchandiser hammers hard on the point that merchandise does *talk* to passersby, that the voice with which it speaks can be changed from a listless whisper to a lusty shout by good technique in arranging and displaying it.

"It is a queer language that goods speak," writes Mr. Crombie to Gardner. "They don't use words. They use impressions. Entire ideas which they slip into a customer's mind at a glance —ideas which the customer could never put into words, in many instances.

"If that window of yours is to stop the largest number of people . . . . it must do far more than simply shout that here is a beautiful refrigerator."

Sales Floor Display

Having told his young sales manager how some window display materials will make a refrigerator display carry a potent message about particular features of the unit to many prospects, Old Crombie takes up the subject of merchandise display on the sales floor.

He describes a refrigerator dealership as it was found by investigating Norge officials, then analyzes its display and points out its faults. This is what he says:

"There is ample stock on the floor. There are 11 refrigerators . . . . in one straight line down the wall with six inches of space between them. They are all drawn up like soldiers on dress parade. True, at one end there is a display card. At the other end, on a table and almost hidden under some literature, is the cutaway rollator.

"Here is the best we can get out of the display as we walk past in customer-fashion and give the display a glance: 'Refrigerators, mister — about a dozen of us all lined up for inspection. Stop and have a look.' If we were customers, we'd probably say, 'Sorry, haven't time. Can't look at a dozen refrigerators this morning.'

Improving the Arrangement

"We pulled off the refrigerator at the end of the line, and made a long, sweeping curve with more space between the refrigerators. We pulled all of them out from the wall and turned some slightly, so they weren't on parade like soldiers. The most popular one we placed about three feet from the aisle, just off the center of the curve, and opened the door. We pulled up a table just behind it, then to one side put the cutaway with the display card."

With the display so rearranged, asserts Old Cromble, 20 times as many prospects will stop at the display, because its message has been changed to this: "Refrigerators, mister, about a dozen of us. We know you haven't time to look at all of us, but just have a glance at this one. It is out here where you can see it easily, and you have time to look at it."

Poor Display Hinders Sales

But just as a good display can make an effective sales talk, a poor arrangement will hinder selling rather than help it. It will contradict every statement a good salesman makes, Distributor Crombie reminds Gardner.

Any refrigerator dealer can become adept at goods display if he will study the impressions made upon him by displays of other types of merchandise, is Old Crombie's assertion. But the dealer must remember to look upon these displays of other lines *as a customer* if he is properly to analyze their effectiveness.

"No merchant," concludes the distributor, "is ever a customer in his own store, and unless he learns how to pretend he is (by observing displays of other merchandise), he will never know what his merchandise and his displays are saying to his actual customers."

EBERHARD TO DISTRIBUTE GRUNOW REFRIGERATORS

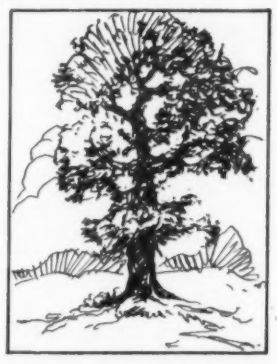
SAN FRANCISCO, Calif.—George H. Eberhard Co., 290 First St., has been appointed distributor for the Grunow refrigerator in this territory. The Eberhard Co. supplants H. R. Curtiss, who has taken over the exclusive distribution of Zenith radio for Northern California.

Try This Refrigerator Selling Plan

Dry-Zero insulation in a refrigerator provides one of the most powerful sales weapons any refrigerator salesman can have. Used properly and regularly, the Dry-Zero story of quality will thoroughly convince prospects, and almost any old-timer will tell you it is one of his really good selling points. So many queer claims about all sorts of insulating materials have been made that this simple, straightforward story becomes doubly effective. Read it over and if you are not already using the material, adapt it to your sales story and see the added strength it gives your canvass.

NRA MEMBER U.S. WE DO OUR PART

A WATERPROOF TROPICAL FIBRE



The Ceiba Aeschulifolia, a strange tropical tree sometimes attaining a height of 70 feet, from the huge seed pods of which comes the light, waterproof fibres for Dry-Zero insulation

In certain tropical areas, notably Java and the South Sea Islands, there is a species of tree called ***Ceiba Aeschulifolia*** that botanically is very old. It has survived centuries of unfavorable growth conditions because of clever provisions of Mother Nature's to insure propagation far and wide. In the giant pods which grow upon this tree are developed the small seeds to which are attached silky, light, white fibres. These fibres are so light that they carry the seeds (when the pods break open) on the wings of the wind for great distances. And to withstand the humid condition of the tropics, Nature has waterproofed them, each fibre being a sealed tube unaffected by moisture, so that even in tropical showers they sail on with their precious seeds over wide areas.

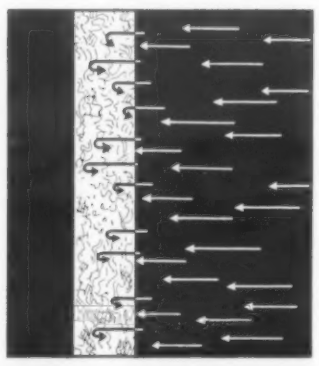
Thus, the centuries have been survived by continual planting of new ***Ceiba*** forests over many miles, due to the light, waterproof qualities of the floating fibres.

FIBRES GRAINED INTO DRY-ZERO

In the Dry-Zero Factory, the Ceiba fibres are "grained" or combed so that all are uniformly parallel, adding about 50% to the high insulating efficiency of the natural fibres

It is these natural qualities that have made the ***Ceiba*** fibre so remarkable for refrigeration insulation. By a patented process of "graining" or combing, the fibres are laid uniformly across the line of heat flow, adding almost 50% to their natural heat insulating value. Then when encased in a vaporproofed covering, the Dry-Zero slabs, made to any size and shape, are sealed between the inner and outer refrigerator shells.

HIGH INSULATION EFFICIENCY



Dry-Zero has the highest resistance to the passage of heat of any commercial insulant. The U. S. Bureau of Standards gives it a heat transmission coefficient of .24 B.T.U.

Many tests have been made of various insulating materials. But under scientific test standards and fair comparative conditions, Dry-Zero is clearly superior in its resistance to the passage of heat. In fact, the results of tests made by the U. S. Bureau of Standards show Dry-Zero to be the most efficient commercial insulant known.

UNAFFECTED BY MOISTURE

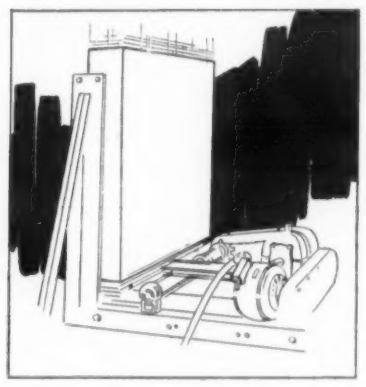
This simple bottle test to demonstrate the effects of moisture on insulation materials can be made by anyone. Samples are placed with a little water in corked bottles and allowed to stand. Other materials are completely destroyed as insulation in from three weeks to eight or nine months

In commercial manufacture, it has not been possible to make a refrigerator that will prevent water vapor from passing into the insulation. Nor is there a refrigerator made that will not show an amount of actual water between the walls after operation for a period of time. The effect on most insulations is disastrous. Many investigations have shown that most older insulating materials broke down from the effects of moisture. Metallic membranes soon corroded and attempts to prevent corrosion proved merely to have dissipated the original insulating value.

But the natural moisture-proof qualities of the ***Ceiba*** fibre prevent any effect of moisture or water vapor on Dry-Zero. It will remain efficient throughout the life of the refrigerator.

Navy life preservers are made of the same ***Ceiba*** fibres. And the first piece of wreckage found from the ill-fated dirigible Akron was an aluminum pipe floating in a wrapping of Dry-Zero.

NON-SETTLING



In the Dry-Zero Laboratory is this specially built "jolting machine." Its purpose is to deliver blows to the edge of a Dry-Zero slab from below as a square shaft revolves. Millions of blows will not cause the Dry-Zero batt to settle so much as a fraction of an inch

Although soft and fluffy, Dry-Zero will not pack down in use. This is due to the permanent resiliency of the fibres which fluff out the batt after it has been compressed. No amount of jolting or vibration, so long as the slab casing is maintained in its original form—as in the walls of a refrigerator—will cause the batt to lose its shape. In fact, in tests running into millions of jolts, the Dry-Zero batt shows a tendency toward expansion rather than settling.

PERMANENT

Many insulants show fairly satisfactory results in a new refrigerator. But it is continued efficiency that is important to your customer. You can not risk selling a refrigerator that will begin to run longer and consume more current after a few months of operation due to gradual failure of the insulation to stop heat seeping through the walls. Dry-Zero's efficiency is permanent throughout many years of service.

DRY-ZERO COSTS MORE

Dry-Zero is never used as a manufacturing economy. Tell your prospects that it actually costs more than other insulations. But it is used in your refrigerator even at greater cost to insure satisfaction to the user. It is evidence that even in hidden places the manufacturer has used the best materials available.

Tell your prospects these facts about Dry-Zero. Your complete sales talk will be made more impressive if you do. The Dry-Zero story has sold many jobs and can help you to steadily build up your own sales. Start today to use it. Dry-Zero Corporation, Merchandise Mart, Chicago, Illinois. Canadian Office: 687 Broadview Avenue, Toronto, Ontario.

THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN **DRY·ZERO**

ELECTRIC REFRIGERATION NEWS
The Newspaper of the Industry
Published Every Week by
BUSINESS NEWS PUBLISHING CO.
Also publishers of REFRIGERATED FOOD NEWS (monthly) and REFRIGERATION DIRECTORY and MARKET DATA BOOK (annual)
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EDITORIAL AIMS

To encourage the development of the art.

To promote ethical practices in the business.

To foster friendly relations throughout the industry.

To provide a clearing house for new methods and ideas.

To broadcast the technical, commercial and personal news of the field.

Blue Eagle Issue

BLUE EAGLE news has been plentiful during the last fortnight. Front pages of the current and previous issues of ELECTRIC REFRIGERATION NEWS have reflected the fact that the industry is deeply concerned over the importance of this remarkable movement.

Manufacturers are writing us that they have climbed aboard the bandwagon, have decreed shorter hours, raised wages, employed more men. Sometimes these statements run into considerable space. Yet they are news, part of what may turn out to be one of the biggest news stories of the twentieth century.

As a part of our program of cooperation with President Roosevelt in promoting the aims and purposes of the National Recovery Administration and as a measure of self defense against the anticipated barrage of "We Do Our Part" statements, ELECTRIC REFRIGERATION NEWS will carry a list of manufacturers now entitled to use the Blue Eagle insignia in the Sept. 6 issue, which will be designated as the Blue Eagle issue of ELECTRIC REFRIGERATION NEWS. Thus the news that various concerns are "doing their part" can be cleaned up in one issue of the NEWS, and in brief compass.

Useful Directory

This will also follow the NEWS policy of printing useful directories of various classifications of industry concerns, and will provide a handy compendium of NRA supporters for ready reference.

In that issue the NEWS will cooperate with advertisers by reproducing the Blue Eagle emblem in color (at no extra charge) in the advertisement of any "employer" provided such employer files with this publication a written statement that he has signed the President's agreement, and affixes the official NRA sticker thereto.

Moreover, it has been decided to delay closing the forms for the new BEER COOLING DIRECTORY AND HANDBOOK until Aug. 31, in order to give all manufacturers (who so desire) sufficient time to comply with the terms of the President's reemployment agreement and display the Blue Eagle insignia in their advertisements.

Program of Cooperation

We say: "as a part of our program of cooperation with President Roosevelt in promoting the aims and purposes of the National Recovery Administration" advisedly. The Business News Publishing Co. has signed the President's agreement, is displaying the Blue Eagle, and is "playing the game." We have advocated editorially that all refrigeration manufacturers not now members of the refrigeration division of the National Electrical Manufacturers Association join that group and assist in the preparation of a supplemental code to be submitted to Administrator Johnson.

As in the past, however, ELECTRIC REFRIGERATION NEWS shall consider its task that of impartial reporting of the news, good or bad, favorable or unfavorable. Recording the names of manufacturers who are taking part in this memorable movement is undoubtedly news, as is progress of the entire NRA plan. In event the NRA fails in purpose, or suffers a break-down in its machinery, that shall be considered news also.

Revolutionary Idea

Whatever the outcome, the Blue Eagle idea is one of the most revolutionary in American economic and political history. Readers of ELECTRIC REFRIGERATION NEWS will receive, in coming issues, complete and readable presentations of the changes in and interpretations of this new set of "rules" which will affect their business. Sifted and digested especially for the refrigeration industry this information will be reported speedily so that readers may be prepared in advance to meet shifting conditions.

Manufacturers who have signed the President's agreement, or who are members of an association which has submitted a code to General Johnson, are requested to convey this information to the editorial department of ELECTRIC REFRIGERATION NEWS at once.

WHAT OTHERS SAY

CODE OF FAIR COMPETITION

PRESIDENT ROOSEVELT has approved the NRA code of the electrical manufacturers. It is now in effect and the N.E.M.A. organization is very busy establishing procedure. Product group classifications must be determined, supervisors must be chosen, trade practices must be stated, and statistical and cost accounting forms and data must be produced. A busy time is ahead, for this work must be done by industry executives, who are also busy trying to get orders and make profits.

This code grants the requests of NRA, but in return gives manufacturers what they have long desired—an opportunity to stabilize their business without fear of anti-trust laws. The code permits complete statistics, complete accounting, use of published prices, investigation and discipline of recalcitrant members and complete cooperation in carrying out any industry objective.

It is a Magna Charta for industry and was granted because it was believed to be in the public interest. It is with this spirit that the powers granted under the code should be exercised. It will take faith, courage, and a degree of cooperation hitherto unknown to make the code operative. This must be had and the past record of electrical manufacturers warrants the prediction that the unselfish attitude and the necessary work and faith will be devoted to secure a fair trial of industry self-government.—*Electrical World*, Aug. 19, 1933.

THE INDUSTRY SUBMITS ITS CODE

"THE radio industry has submitted its code of fair competition to the National Recovery Administration. The provisions of the code represent the best thoughts of the Board of Directors and the members of the Code Committee of the Radio Manufacturers' Association and were arrived at after weeks of hard work and intensive study of bales of statistics pertaining to production and distribution processes. The code is replete with clauses that will directly affect every branch of the industry and will change existing merchandising practices in the interest of manufacturers, distributors, and dealers. Perhaps the outstanding provisions are: (1) a special trade agreement providing uniform contracts between manufacturers, distributors, and dealers, definitely establishing standard discounts, relations, and trade practices in the marketing of radio receivers, and (2) the establishment of a scale of minimum prices of receiver chasses based on production costs below which "cost of production" no manufacturer may sell . . .

"Doubtless some members of the industry will fail to agree 100 per cent with all of the proposals. Such unanimity of approval cannot be expected. Drafting the procedure by which an entire industry is to be rehabilitated and re-established on a sound and profitable basis is a task of staggering proportions and it would be unreasonable and impossible for the finished product to be regarded by each member of the industry as expressing his views exactly. However, the committees which drafted the codes feel that the provisions are eminently fair both to large and small legitimate manufacturers as well as to small independent dealers as well as to the larger retail organizations.

"It is entirely possible that revisions will be made in the code before it is approved by the NRA officials, signed by President Roosevelt, and put into operation. There is ample time for members of the industry to confer with the Radio Emergency National Committee and give their thoughts on provisions with which they are not in accord. BUT when the code is formally adopted and put into effect it is the bounden duty of everyone connected with the radio industry to give 100 per cent cooperation regardless of personal views."—*Radio Merchant*, August, 1933.

LETTERS

National Contracts Unfair to Dealer

John H. Hunter, Inc.
Dealer in Frigidaire Products
1251 Elizabeth St., Brownsville, Tex.
Aug. 16, 1933.

Editor:

I have been reading your publication very closely following the NRA activity of the manufacturers. I have not seen anything which would indicate that the retailers are forming a code. If such a body is at work there is one phase of our business that is so manifestly unfair that I think it should be called to their attention and be eliminated if possible. I refer to the so called "National Contract" business that is indulged in by practically all manufacturers. This business is useless and is unfair to the competitors of the National Contract Buyers. It is unfair to the dealer in that he is required to install and service it, and in a good many cases sell it the same as he does ordinary retail business, for a very slim return.

If there is no organized effort at this time towards forming a code for retail refrigerating operations, I suggest that this would be a good load for your willing shoulders to take on.

JOHN H. HUNTER.

Increased Salaries

Uniflow Mfg. Co.
Erie, Pa.
Aug. 19, 1933.

Publisher:

Have been away all week and just returned. I noticed in the Aug. 16 issue statements by various manufacturers, concerning operations under the NRA.

Before I left the city all plans were made and we started operations under the Nema Code on the 14th. We are now operating 35 hours in the factory and 40 hours for office employes, at a minimum rate of 40 cents in the factory. Although an increase of 5 per cent was put into effect for all employes, before the code was effective, and an additional 10 per cent increase for office employes and those above the minimum, made effective Aug. 14.

C. A. KUEBLER,
President.

Public Considers Teigen a Joke

Schultheis & Sons
522-524 Main St., Vincennes, Ind.
Aug. 8, 1933.

Editor:

Recently a customer handed us the enclosed letter, which seems to be a circular directed to a list of prospective buyers of electric refrigerators presumably furnished by local ice dealers.

Probably this matter has been brought to your attention before now and our purpose in writing is to ask if statistics are available to disprove the claims and statements made therein.

Frankly we are not greatly worried about the facts of the letter as the few people that have called our attention to the matter have treated it as a joke, and have agreed with us in deploring the tactics of any competitor that will stoop to this form propaganda in an attempt to sell merchandise, but nevertheless we would be glad to receive any contradictory information that you may be able to furnish.

W. H. MATHEN.

Answer:

You will find a complete answer to the propaganda of F. Austin Teigen on page 11 of the Aug. 16 issue of ELECTRIC REFRIGERATION NEWS.

On this page is reprinted in full an editorial published in the Aug. 12, 1933, issue of the *Journal* of the American Medical Association. This association is widely recognized as the authoritative spokesman of the medical profession and after reading the comments, I believe you will agree that no further material is needed to dissipate Mr. Teigen's theories.

The last year of the well-known depression has been marked by a great many manifestations of mental instability. It has been an open season for silly theories of all kinds, but fortunately there is evidence that a fair portion of the public has refrained from going crazy.

Vicious Propaganda Of Ice Companies

Keokuk Refrigerating Co.
Keokuk, Iowa
Aug. 3, 1933.

Editor:

We have just obtained a copy of a circular which is being distributed here in Keokuk as well as several nearby towns by the ice companies.

In our opinion the statements made in this piece of advertising are quite misleading, and a rather vicious piece of propaganda aimed at the manufacturers of mechanical refrigerating equipment.

Whether or not this literature is being distributed only locally or on a larger scale we do not know; however, we believe that it will influence a considerable number of people in spite of the fact that most of its statements can be rather readily disproven.

We would appreciate your advising whether, in your opinion, the Better Business Bureau or the Federal Trade Commission would be interested in its suppression as coming under the heading of unfair competition, and are therefore sending it on to you. We shall be glad to learn what your reactions are to it.

G. L. WEISSENBERGER,
Manager.

Note: The enclosure mentioned above is a 4-page folder in color entitled: "Purity vs. Contamination" issued by Refrigeration Research Bureau, Inc., Minneapolis, Minn.

Amusing & Amazing

General Electric Co.
Electric Refrigeration Department
Nela Park, Cleveland
Aug. 8, 1933.

Publisher:

It might be interesting to add the following to the amusing, as well as amazing, Grunow controversy.

There are six General Electric refrigerators installed and *operating* in the Hall of Science—four of these are bottle water coolers and two are 17½-cu. ft. domestic models. The latter two are in everyday use in the Trustees Club Kitchen.

It is hardly possible that a group of scientists connected with "A Century of Progress" met before our refrigerators were installed—to the best of our knowledge, practical reasons were the primary considerations.

W. J. DAILY,
Manager, sales promotion division.

Another Letter on The Grunow Exhibit

Weis Norge Co.
Distributors Rollator Refrigerators
119 N. Middle St., Cape Girardeau, Mo.
Aug. 2, 1933.

Publisher:

In your July 26 issue, page 11, we noted with interest your comments on the controversy with reference to unethical and misleading advertising of the Grunow Corp.

We are enclosing herewith a certified copy of a letter received from Mr. C. W. Fitch, Director of Exhibits, Century of Progress, and by referring to paragraph three of this letter, you will note the information you are seeking with reference to "Wins First Honors at World's Fair Century of Progress".

You will note in this paragraph Mr. Fitch emphatically states that no competition was held in the selection of the Grunow refrigerator unit, neither is it the policy of the exposition to award prizes. We believe that the proof that you are looking for to the effect that the Grunow advertising was unethical and misleading is entirely taken care of in paragraph three of Mr. Fitch's letter.

If you desire the original copy of the letter in question, we will be glad to forward same to you by registered mail.

G. A. WEIS.

Weis Norge Co.
Cape Girardeau, Mo.
Mr. G. A. Weis

I have your letter of July 24.

A Century of Progress has installed in the Hall of Science exhibits showing the outstanding scientific discoveries of the past hundred years. Included in these scientific displays is an exhibits showing the cycle of refrigeration. The Grunow Co. loaned to the exposition, as a part of this exhibit, a refrigeration unit which operates behind glass so as to expose the refrigeration cycle.

No competition was held in the selection of this refrigerating unit and, as you probably know, it is not the policy of the Century of Progress Exposition to award prizes.

Industry has cooperated with the exposition by sponsoring many of the exhibits in pure science. This is in addition to their commercial exhibits. Many of the refrigerating companies are commercial exhibitors.

May I take this opportunity of congratulating you on the very interesting exhibit of the Norge Corp. in the exposition.

A CENTURY OF PROGRESS.
C. W. FITCH,
Director of Exhibits.

Before me personally appeared the undersigned G. A. Weis, who swears the above to be a true and exact copy of letter signed by C. W. Fitch, Director of Exhibits, Century of Progress, Chicago, Ill.

Signed G. A. Weis.
Seal W. F. D. Batjer,
Notary Public.
Of and for Cape G. County, Mo.

COMMERCIAL REFRIGERATION

How a Commercial Sales Department Operates

As Told by C. G. Blackburn, Commercial Manager, Caswell, Inc., Michigan G-E Distributor

By Phil B. Redeker

DETROIT—"The way to make any sales organization successful is to work out a plan of operation and then see to it that it is followed," says C. G. Blackburn, commercial sales manager for Caswell, Inc., Michigan G-E refrigeration distributor. Mr. Blackburn is leading the country-wide commercial sales contest which is being sponsored by the refrigeration department of General Electric Co.

"After a salesman has been with me for a while and has demonstrated that he can sell, I can practically guarantee him a certain return for the amount of work he puts in," Mr. Blackburn declares.

"I can predict for him the amount of money that each call will bring him. This is done by taking his commission for a certain period and dividing this amount by the number of calls the salesman has made during this period. We have found that once a salesman gets into his work the worth of each call varies but little from week to week and month to month.

How Work Is Divided

"Thus, I am able to point out to the salesman that if he follows the plan very closely, his income will be dependent upon the amount of work he does each day."

In organizing his selling forces for the attack on the commercial market in the Detroit metropolitan area, Mr. Blackburn has divided the area into six districts. The division was made in accordance with a survey made by a newspaper which classified and located meat markets, restaurants, and other potential users of commercial refrigeration.

Each district includes about an equal number of commercial prospects, although they may differ greatly in geographical area. Each salesman is given the responsibility for cultivating his territory.

Plan of Action

There is no special division to handle "institutional" and "contract" (public buildings, etc.) business. If this type of prospect is in one of the territories, it is up to the individual salesman to establish relationships with such potential users of commercial refrigeration.

Mr. Blackburn has an intimate knowledge of the standing and conditions of most of the real prospects in and around Detroit. He makes out the orders of the day which direct the salesman to apply selling tactics to six good prospects. These orders are made out on the basis of previous reports by the salesmen and from data obtained by the commercial sales manager.

The salesmen are expected to contact at least 12 new possible users of commercial refrigeration each day and to see as many users as possible. Concerning users, Mr. Blackburn uses the old G-E motto, which he expects his men to follow as part of their routine:

"See a user before nine
And start the day off fine."

User Contacts

It is important that users be contacted, Mr. Blackburn points out, because they are not only prospective purchasers of more equipment, but because they can furnish valuable selling ammunition in the form of testimonials, both written and verbal. Salesmen often like to have prospects look at other installations, and it is necessary to cultivate the user to the point where he will cooperate in demonstrating a job in operation to a prospect.

Mr. Blackburn believes in intensive sales education and sales training. Regarding the training of salesmen he says:

"The first thing I have them do is to buy the data book, which contains all the details of our line. It costs 'em $5, but that price makes them show a whole lot of respect for its contents.

"I have them sit down and study the data book for a couple of days, and perhaps I go over some of the parts with them. Then when I think they're prepared I give them a test in the form of a lot of questions concerning information contained in the book.

Purpose of Sales Education

"This education is continued in our morning meetings. Salesmen are encouraged to bring up problems that arise in connection with their work.

"Twice each month every salesman is required to get up before the class and give me the story of G-E 'conditioned-air' refrigeration, as he would present it to the prospect. A salesman who can't give me a smooth selling talk on 'conditioned air' refrigeration when requested to do so has no place with the organization."

The reason behind this intensive sales training is Blackburn's belief that sales are made when all the objections that the prospect raises are overcome.

"When the prospect has run out of objections, you've won, haven't you?" he reasons.

The manner in which a typical salesman in Blackburn's department operates is outlined by the commercial sales manager as follows:

The salesman calls upon a prospect for the first time. He usually has no trouble gaining an audience with the merchant, and only seeks enough information to form the basis for a survey report which shows the type of equipment in operation at the time of the call, and the equipment which the prospect needs and would like to have.

These survey reports are filed on cards which present a complete picture of all the "live" and "dead" prospects in the Detroit area.

Before the salesman makes his next call on the prospect he receives an estimate from the commercial sales engineer as to the amount of equipment needed for the job and the approximate price.

On his second call the salesman leaves an elaborate piece of sales promotion literature on the subject of conditioned air refrigeration with the prospect. He explains the story of conditioned air refrigeration before he leaves the sales promotion piece, however, this being a hard and fast rule of the commercial sales department.

More sales promotion and educational material may be fired at the prospect if he isn't then ready for closing. Mr. Blackburn advocates the personal delivery of such sales promotion pieces, rather than sending them through the mail.

When the prospect is "hot", Mr. Blackburn may often accompany the salesman in applying "pressure."

"I don't ask the salesmen to do anything that I wouldn't or can't do myself," Caswell's commercial sales manager declares.

"Commercial selling is a lot of things—it is finding and weeding out prospects, it is cultivating them to the point where transactions are carried out on a friendly basis, it is having the answer to every objection the prospect can raise.

"But most of all it is creating the right plan—or formula—and sticking to it."

Cool Beer for Dayton Visitors

Frigidaire draft beer cooler in the Van Cleve hotel, Dayton. The refrigerator at the right is used to cool bottled beer.

FRIGIDAIRE PLAN IS AID TO FOOD STORE

BOSTON—A 50 per cent increase in patronage over a two-day period, a 35 per cent increase in dollar volume in the same period, and the permanent retention of 15 per cent of this new patronage.

This is what Frigidaire's "Business Building Plan" has done for the Columbia Market, Inc., of Portland Me., according to Herbert K. Smaha, treasurer of the firm.

Food Protection Theme

The "Business Building Plan" is designed to show housewives that the merchant who uses Frigidaire is selling "safe" food, free from all danger of taint of spoilage. Merchants who are using Frigidaire commercial refrigeration display a "Protected Foods", symbol in their windows.

When Frigidaire was installed in the Columbia market not long ago the store was provided with the following material to be used in letting the community know that the store was being equipped with Frigidaire commercial refrigeration:

Window symbols with the "Frigidaire Protected Foods" emblem, window displays bearing the symbol with space left to advertise the day's bargain special, folders, price markers, decorative banners, invitations to attend the special "Protected Foods Celebration," souvenirs, handbills, and newspaper advertising mats.

Procedure Recommended by Factory

The procedure recommended by Frigidaire's sales promotion department was followed to the letter. Five hundred handbills were distributed. A hundred invitations were sent to regular customers. Window trim and interior decorations were placed. Four 2-min. announcements were broadcast by the local radio station and a 20-in. advertisement was placed in a local newspaper.

During the two-day "Celebration" 3036 customers were served, this being 1,005 more than the store had ever served in any previous two days' period in the entire history of its business.

This rush of business represented an increase of 35 per cent in dollar volume of sales, of which 15 per cent is classed as "permanent" by Mr. Smaha.

HOTEL USES FRIGIDAIRE, FILTRINE WATER COOLER

NEW YORK CITY—A new circulating drinking water system has just been installed in the Barbizon hotel of this city, according to William Barry, manager of the hotel and institution sales division of Frigidaire Sales, Inc., local branch.

The equipment includes a 3-hp. Frigidaire water-cooled freon machine and a model M-150-R Filtrine water cooler installed in the basement. Chilled drinking water is circulated to 600 rooms of the hotel by means of a 1-hp. centrifugal pump.

WESTINGHOUSE FIRM GETS WATER COOLER CONTRACTS

PHILADELPHIA—Two large government jobs in this city calling for installation of water coolers have been secured by Elin Corp., Westinghouse distributor here.

The $3,000,000 Naval Hospital now under construction will use 50 coolers supplied by the distributor, while the new post office has ordered 75. In addition to the water coolers, the hospital plans to install some 25 special cabinets having a capacity of from 6 to 25 gallons per hour, equipped with Westinghouse compressors.

IN WHICH WE REVIEW SOME OF OUR 1932 ADVERTISING

This advertisement appeared in October 1932.

"THERE IS ALWAYS A *TOMORROW*

It may be wise—at times—to be an opportunist. But it is never sound policy to jeopardize tomorrow for the sake of today. We adhere strictly to this principle in the conduct of our business. The character of the commercial equipment which we offer is designed to build lasting good will as well as to produce immediate sales."

Present day developments indicate that our position then was sound and well taken.

UNIVERSAL COOLER CORPORATION
DETROIT, MICHIGAN — BRANTFORD, ONTARIO

MANUFACTURERS OF A COMPLETE LINE OF HOUSEHOLD AND COMMERCIAL REFRIGERATION EQUIPMENT

SPECIFICATIONS
OF COMMERCIAL REFRIGERATING MACHINES[1*]

Tabulated on this and succeeding pages are specifications of 31 leading makes of commercial refrigerating machines.

Specifications of the commercial condensing units manufactured by Curtis Mfg. Co., which were not ready for release in this issue, will be published in a later issue. Specifications of additional Westinghouse models will be published in a later issue.

Unless otherwise specified, the machines are presumably rated under A.S.R.E. standard conditions (suction pressure corresponding to a saturation temperature of 5° F., discharge pressure corresponding to 86° F.) as was requested in the questionnaire.

For the reader's convenience, we have noted exceptions to this standard method of rating as follows:

General Electric has rated its units under the A.S.R.E. standard conditions but expressed its rating in B.t.u.'s per hour.

Frick Co. rates its air-cooled units at a discharge pressure corresponding to a temperature of 104° F., but otherwise the conditions conform to A.S.R.E. standards.

General Refrigeration Sales Co.'s units are rated in B.t.u.'s per hour, the rating being based on a suction pressure corresponding to a saturation temperature of 5° F., and a discharge pressure of 80 lbs.

Howe Ice Machine Co. bases its rating on a 22° F. evaporator temperature and 86° F. condensing medium temperature.

ICE-O-MATIC

Williams Oil-O-Matic Heating Corp., Ice-O-Matic division, Bloomington, Ill.

Model No.	A AW AAW	B BW BAW	H HW HAW	C CW CAW	D DW DAW	FW FAW	VW	WW
Overall Dimensions (in.)								
Width	27	27	35	35	35	37	37	37
Depth	18	18	23	23	23	23	23	23
Height	19	19	27	27	27	27	28½	28½
Refrigeration Capacity								
In lbs. I.M.E. per 24 hrs.	148	286	437	581	880	1400	1960	2800
Compressor Specifications								
Compressor speed (r.p.m.)	310	400	275	325	275	440	325	430
No. of cylinders	2	2	2	2	2	2	4	4
Bore (in.)	1½	1⅝	2	2	2⅜	2⅜	2⅜	2⅜
Stroke (in.)	1½	1½	2⅜	2⅜	2½	2½	2½	2½
Motor size (hp.)	1/4	1/3	1/2	3/4	1	1-1/2	2	3
Quantity refrigerant in system (lbs.)	3	3	5	5	6	7	7	7
Pump down capacity of receiver (lbs.)	3.5	3.6	11	11	18	20	20	20
Quantity of lubricant in system (lbs.)	3	3	7	7	7	7	5	5

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Cooke
Cylinder head cooled by.....Models VW & WW—water; others—air
Type of lubrication system..Models VW & WW—forced; others—splash

Condenser & Liquid Receiver
Method of cooling.....Models A, B, H, C, D—air; models AAW, BAW, HAW, AW, BW, HW, CW, FW, VW, WW—CAW, DAW, FAW—air & water; models AW, BW, HW, CW, DW, FW, VW, WW—water
Type of condenser.....Finned tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....Yes

Motor
Make of motor.....Wagner

Refrigerant
Kind used.....Methyl chloride

Control
Make of control.....Penn
Type of control.....Pressure
High pressure cut-out.....All models
Point of operation of cut-out.....165 lbs.
Condensing water flow controlled by Pressure valve
Type of overload cut-out..Thermal switch

Valves
Type of discharge valve.....Steel reed
Type of suction valve...Models A, B, H, C—disc; models D, F, V, W—poppet
Type of water valve....Pressure regulated

Materials Used
Cylinder block.....Cast alloy iron
Pistons.....Cast iron
Condenser tubes.....Copper
Condenser shell.....Steel

UNIVERSAL COOLER

Universal Cooler Corp., 7424 Melville Ave., Detroit, Mich.

Model No.	251	332	W332	502	W502	752	W752	1002	W1002	1502	W1502	W2002	W2003	W3003	W5003	W7503	W10003
Overall Dimensions (in.)																	
Width	24	24	24	29½	29½	29½	29½	36	36	36	36	36½	51	51	51	...	56
Depth	14¼	16	16	18	18	18	18	23½	23½	23½	23½	23½	23½	23	23¼	56	28
Height	19¼	19¼	19¼	21½	21½	21½	21½	28	28	28	28	26½	29	29	29½	35	35
Refrigeration Capacity																	
In lbs. I.M.E. per 24 hrs.	113	264	324	423	538	509	643	835	972	958	1157	1157	2016	2844	4812	8160	9120
Compressor Specifications																	
Compressor speed (r.p.m.)	320	320	320	320	360	360	420	275	275	320	400	400	400	480	480	345	400
No. of cylinders	1	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3
Bore (in.)	1.8125	1.8125	1.8125	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.5	2.5	3.25	3.0	3.0
Stroke (in.)	1½	1½	1½	1½	1½	1½	1½	3	3	3	3	3	3	3	3	4	4
Motor size (hp.)	¼	⅛	⅛	⅛	½	¾	¾	1	1	1½	1½	2	2	3	5	4¼	4¼
Quantity of refrigerant in system (lbs.)	2½	3½	3½	4	4½	4½	5	8	8	8	8	8	12	12	12	7½	10
Quantity of lubricant in system (pts.)	¾	2½	2½	2½	2½	2½	2½	6	6	6	6	6	12	12	12	16	16

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Bellows
Cylinder head cooled by....Models W2003, W3003, W5003, W77503, W10003—water; others—air
Type of lubrication system.....Splash

Motor
Make of motor.....Wagner or Century

Refrigerant
Kind used.....Methyl chloride or Freon

Condenser & Liquid Receiver
Method of cooling.....W models—water; others—air
Type of condenser.....W models—double tube; others—radiator
Type of liquid receiver....Models 251, 332, W332, W752, 1002, W1002—vertical; others—horizontal
Has receiver fusible safety plug....Models 251, 332, W332—no; others—yes

Valves
Type of discharge valve.....Disc
Type of suction valve.....Disc
Type of water valve.....Pressure

Control
Make of control.....Tagliabue or Penn
Type of control.....Pressure
High pressure cut-out.....Water cooled models—yes; others—no
Point of operation of cut-out.....150 lbs.
Condensing water flow controlled by Pressure
Type of overload cut-out.....Models 251, 332, W332, 502, W502, 703, W752—fuse; others—thermal cutout

Materials Used
Cylinder block.....Semi-steel
Pistons.....Semi-steel
Condenser tubes.....Copper

SERVEL

Servel Sales, Inc., Evansville, Ind.

Model No.	14A	19A	30C	30DW	50D	50DW	75C	75EW	100C	100EW	150A	150BW	200A	200BW
Overall Dimensions (in.)														
Width	20	19⅝	27	27½	31½	31½	31½	31½	39	39½	39	39½	38¾	38¾
Depth	15	16½	16½	18¼	21½	21½	21½	21½	24	24	24½	25½	27¼	26½
Height	18	13½	19	20	22½	22½	22½	22½	25½	36	25½	26	26¼	25¾
Refrigeration Capacity														
In lbs. I.M.E. per 24 hrs.	94	165	344	375	465	580	710	865	1110	1115	1450	1450	2020	2020
Compressor Specifications														
Compressor speed (r.p.m.)	430	425	410	450	270	310	435	475	355	355	475	485	475	485
No. of cylinders	1	1	2	2	2	2	2	2	2	2	2	2	3	3
Bore (in.)	1¾	1⅝	1⅝	1⅝	2⅛	2⅛	2⅛	2⅛	2¼	2¼	2¼	2¼	2¼	2¼
Stroke (in.)	1-7/16	1⅝	1⅝	1¾	2	2	2	2	2-13/16					
Size of motor (hp.)*	⅛	¼	⅓	½	½	½	¾	¾	1	1	1½	1½	2	2
Pump down capacity of receiver (lbs.)	2	3	5½	5½	6½	6½	6½	6½	18	18	18	18	18	18
Quantity of lubricant in system (pts.)	1	1	2	2	4	4	4	4	8	8	8	8	10	10

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Bellows
Cylinder head cooled by....Models EW & BW—water; others—air
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....A, C, & D models—air; AW, EW, & DW—water
Type of condenser.....A, C, & D models—radiator; AW, BW, DW, & EW models—concentric tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....No

Motor
Make of motor.....Wagner

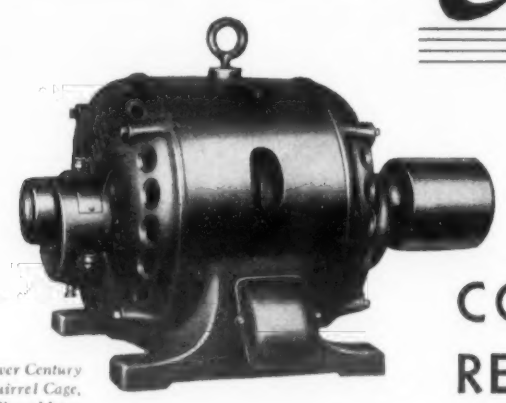
Refrigerant
Kind used.....Methyl chloride

Control
Make of control.....Model 14A—Bishop & Babcock; others—Penn
Type of control...Pressure or temperature
High pressure cut-out.....Models 40AW, 50DW, 75EW, 100C, 100EW, 150A, 150BW, 200A, & 200BW
Point of operation of cut-out....AW, BW, DW, EW models—125 lbs.; others—160 lbs.
Condensing water flow controlled by Condensing pressure
Type of overload cut-out.....Thermal

Valves
Type of discharge valve.....Disc
Type of suction valve.....Flapper
Type of water valve..Condensing pressure

Materials Used
Cylinder block.....Semi-steel
Pistons.....Semi-steel
Condenser tubes.....Copper
*All models available with the motor one size larger.

Century



10 Horse Power Century Type SC Squirrel Cage, Induction, 3 Phase Motor

for COMMERCIAL REFRIGERATORS

In commercial-refrigerating and air-conditioning service where operating demands are continuously severe, Century Type SC Squirrel Cage Motors continuously demonstrate their ability to "Keep a-Running" and satisfy—even where dampness and moisture are daily encountered—and where motors of substantial construction should be used to insure satisfactory operation at all times .... Investigate Century Motors for commercial applications.... Take advantage of Century's Engineering Service and specialized experience in these lines.

See Century Electric Company Display, Electrical Building, Century of Progress.

Century MOTORS

CENTURY ELECTRIC COMPANY
1806 Pine Street . . . St. Louis, Mo.
Offices and Stock Points in Principal Cities

ALTERNATING AND DIRECT CURRENT, SINGLE PHASE, POLYPHASE, SPLIT PHASE, MULTISPEED AND SPECIAL MOTORS, RANGING IN SIZE—DEPENDING ON TYPE—FROM 1/250 TO 600 H.P.... GENERATORS, MOTOR GENERATOR SETS, ROTARY CONVERTERS, ACTODECTORS AND EMERGENCY LIGHTING PLANTS.

M & E

Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa.

Model No.	175 MC	275 MC	350 MC	450 MC	725 MC	1100 MC	600 WMC	C1100 WMC	1300 WMC	1800 WMC	C1800 WMC
Overall Dimensions (in.)											
Width	21	21	21	21	33	42	61	42	42	42	42
Depth	15	28	28	28	21	26	28	26	26	26	26
Height	14	18	18	18	23	27	18	27	27	27	27
Refrigeration Capacity											
In lbs. I.M.E. per 24 hrs.	210	330	418	600	900	1310	621	1310	1560	2160	2160
Compressor Specifications											
Compressor speed (r.p.m.)	625	...	...	500	450	220	500	285	285	365	365
No. of cylinders	1	2	2	2	2	2	2	2	2	2	2
Bore (in.)	1½	...	...	1⅝	2¼	2⅝	1⅝	2⅝	2⅝	2⅝	2⅝
Stroke (in.)	1¼	...	...	2	2⅛	3½	2	3½	3½	3½	3½
Motor size (hp.)	¼	⅛	½	¾	1	1½	¾	1½	1½	2	2
Pump down capacity of receiver (lbs.)	2	7	7	7	7	13	7	13	13	13	13
Quantity of refrigerant in system (lbs.)	5	15	15	15	28	28	15	28	28	28	28
Quantity of lubricant in system (lbs.)	½	2½	2½	2¾	3¼	6	2¾	6	6	6	6

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Type of drive.....Belt
Type of shaft seal.....Model 175MC—diaphragm; others—bellows
Cylinder head cooled by.....MC models—air; WMC models—water
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....MC models—air; models C1100WMC & C1800WMC—water; others—both
Type of condenser.....Air cooled models—finned tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....No

Motor
Make of motor.....Wagner

Refrigerant
Kind used.....Methyl chloride

Control
Make of control.....Detroit or Mercoid
Type of control.....Pressure
High pressure cut-out.....All models
Point of operation of high pressure cut-out.....175 lbs.
How is condensing water flow controlled.....Penn water valve
Type of overload cut-out..Cutler-Hammer

Valves
Type of discharge valve.....Disc
Type of suction valve.....Port
Type of water valve.....Penn

Materials Used
Cylinder block.....Semi-steel
Pistons.....Cast iron
Condenser tubes.....Copper
Condenser shell.....Steel

BEDELL

Bedell Engineering Co., 5400 Santa Fe Ave., Los Angeles, Calif.

Model No.	G	F	EW	EA	BW	BA	CW	CA	DW	DA
Refrigeration Capacity										
In lbs. I.M.E. per 24 hours	144	172	414	345	1171	976	2332	1944	3168	2640
Compressor Specifications										
Compressor speed (r.p.m.)	350	350	350	350	350	350	350	350	350	350
No. of cylinders	1	1	2	2	2	2	4	4	6	6
Bore (in.)	1⅝	1⅝	1⅝	1⅝	2¼	2¼	2¼	2¼	2¼	2¼
Stroke (in.)	1⅝	1⅝	1⅝	1⅝	2¼	2¼	2¼	2¼	2¼	2¼
Motor size (hp.)	¼	⅓	½	½	½	⅝	1	1½	1½	2

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Rotary
Cylinder head cooled by.....Air
Type of lubrication system.....Splash

Motor
Make of motor.....Wagner & Century

Refrigerant
Kind used.....Methyl chloride*

Condenser & Liquid Receiver
Method of cooling.....G, F, & all A models—air; others—water
Type of condenser.....Finned tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....Yes

Valves
Type of discharge valve.....Disc
Type of suction valve.....Disc

Control
Make of control.....Penn
Type of control.....Pressure
High pressure cut-out.....All models
Condensing water flow controlled by.....Counter flow
Type of overload cut-out.....Penn

Materials Used
Pistons.....Gray iron, & nickel & steel
Condenser tubes.....Copper
Condenser shell.....Steel

*Models can also be supplied with sulphur dioxide as the refrigerant.

FRIGIDAIRE

Frigidaire Corp., Dayton, Ohio

Model No.	AA 120	A 125	AB 133	A 233	A 375	A 4100	A 5150	W 233	W 350	W 475	W 5100	W 6150	FW 4151	*FW 4152	FW 6200	FW 6300	FW 7500	FW 7750	FW 71000
Overall Dimensions (in.)																			
Width	19⅞	20¾	20¾	31¼	32½	37	40	33¼	33¼	37	40	42½	40	40	42½	42½	54½	54½	54½
Depth	15	15⅜	17	17¼	21	21¼	24	19¼	19¼	19¼	21	22½	21	21¾	22½	22½	32	32	32
Height	13⅝	13⅝	13⅝	19½	22	22	26	20	20	22	25	33¼	24½	24½	33¼	33¼	34½	34½	34½
Refrigeration Capacity																			
In lbs. I.M.E. per 24 hours	193	234	298	410	765	1145	1480	463	645	1000	1480	1860	1450	1450	2520	3100	5900	9400	10800
Compressor Specifications																			
Compressor speed (r.p.m.)	375	455	580	310	450	475	425	350	415	415	425	535	360	360	435	535	360	575	660
No. of cylinders	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4
Bore (in.)	1½	1½	1½	1⅞	2⅛	2⅛	2½	1⅞	2⅛	2⅛	2½	2½	2⅛	2⅛	2½	2½	3⅛	3⅛	3⅛
Stroke (in.)	1-7/16	1-7/16	1-7/16	2⅜	2⅜	3¼	3½	2⅜	2⅜	3¼	3½	3½	3¼	3¼	3½	3½	3⅜	3⅜	3⅜
Motor size (hp.)	⅛	¼	½	⅓	¾	1	1½	½	½	¾	1	1½	1½	1½	2	3	5	7½	10
Quantity of refrigerant in system (lbs.)	2	3	3	3	3	3½	4	3	3	3½	4	8	12	12	8	8	8	15	15
Pump down capacity of receiver (lbs.)	6.8	13.9	13.9	19.0	21.5.	23.5	.35.0	21.5	21.5	23.5	35.0	56.0	35.0	35.0	56.0	56.0	65.0	130.0	130.0
Quantity of lubricant in system (lbs.)	1½	1½	1½	3½	3½	4	4	3½	3½	4	4	4	4	4	4	4	8	8	8

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Compressor
Type of system .....Conventional
Type of compressor .....Reciprocating
Compressor drive .....Belt
Type of shaft seal .....Bellows
Cylinder head cooled by.....A models & models FW7500, FW7750, & FW7100—air; others—water
Type of lubrication system.....Models FW7500, FW7750, & FW71000—forced; others—splash

Condenser & Liquid Receiver
Method of cooling.....A models—air; W models—water
Type of condenser.....A models—finned tube; W models—double tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug....Models FW7500, FW7750, & FW71000—yes; others—no

Motor
Make of motor .....Delco

Refrigerant
Kind used.....FW models—Freon; others—Freon or sulphur dioxide

Control
Make of control .....Frigidaire
Type of control...Pressure or temperature
High pressure cut-out.....All models
Point of operation of high pressure cut-out .....Models FW7500, FW7750, & FW71000—185 lbs.; others, when using SO_2—135 lbs.
Condensing water flow controlled by Head pressure
Type of overload cut-out.....Thermal
Type of discharge valve...Models FW7500, FW7750, & FW71000—ring; others—steel spring
Type of suction valve.....Models FW7500, FW7750, & FW71000—ring; others—disc

Materials Used
Type of water valve.....Pressure
Cylinder block .....Cast iron
Pistons .....Cast iron
Condenser tubes .....Models FW7500, FW7750, & FW71000—brass; others—copper
Condenser shell .....Steel

Special Features
Model FW4152 is fitted with a water-cooled fin coil in addition to the condenser, so that the condensing unit may be operated in a small enclosure.

GENERAL ELECTRIC

General Electric Co., Nela Park, Cleveland, Ohio

Model No.	CM-4A	CM-5A	CM-5W	CM-6A	CM-6W	CM-8W	CM-10W
Overall Dimensions (in.)							
Width	22	32	22	32	32	32	32	32	32	36⅜	36⅜	36⅜	40	40	40	48⅜	48⅜	48⅜	60⅞
Depth	15⅞	15⅞	15⅞	16½	16½	16½	16½	16½	16½	21⅞	21⅞	21⅞	18¾	18¾	18¾	23½	23½	23½	33¾
Height	20¼	20¼	20¼	24¼	24¼	24¼	24¼	24¼	24¼	31⅝	31⅝	31⅝	30⅞	30⅞	30⅞	31⅝	31⅝	31⅝	39½
Refrigeration Capacity																			
In B.t.u.'s per hour*	1350	1650	2000	2750	3400	3800	2450	3000	3500	5150	6300	7250	4800	5700	7900	9400	11400	13100	...
Compressor Specifications																			
Compressor speed (r.p.m.)	400	525	585	325	425	525	325	425	525	275	375	450	275	375	450	275	325	375	275
No. of cylinders	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4	4
Bore (in.)	1⅝	1⅝	1⅝	2	2½	2½	2½	2½	2½	3½	3½	3½	3½	3½	3½	3½	3½	3½	4
Stroke (in.)	1⅝	1⅝	1⅝	2½	2½	2½	2½	2½	2½	3½	3½	3½	3½	3½	3½	3½	3½	3½	4
Motor size (hp.)	⅛	½	¾	¾	1	1	¾	1	1	1½	1½	2	1	1	2	2	3	3	10
Quantity of refrigerant in system (lbs.)	3½	3½	3½	7½	7½	7½	7½	7½	7½	14	14	14	14	14	14	20	20	20	40
Pump down capacity of receiver (lbs.)	6.5	6.5	6.5	12.6	12.6	12.6	12.6	12.6	12.6	22.1	22.1	22.1	22.1	22.1	22.1	37.2	37.2	37.2	68
Quantity of lubricant in system (pts.)	2½	2½	2½	4	4	4	4	4	4	6	6	6	6	6	6	10	10	10	...

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Compressor
Type of system .....Conventional
Type of compressor.....Reciprocating
Compressor drive .....V-belt
Type of shaft seal .....Bellows
Cylinder head cooled by.....W models—water; A models—air
Type of lubrication system.....Model CM-10W—forced; others—splash

Condenser & Liquid Receiver
Method of cooling.....A models—air; W models—water
Type of condenser.....A models—finned tube; W models—double tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....Yes

Motor
Make of motor.....General Electric

Refrigerant
Kind used .....Sulphur dioxide

Control
Make of control.....Penn
Type of control .....Pressure
High pressure cut-out.....All models
Condensing water flow controlled by Condensing pressure
Type of overload cut-out.....Thermal

Valves
Type of discharge valve .....Reed
Type of suction valve.....Disc

Materials Used
Cylinder block .....Semi-steel
Pistons .....Cast iron
Condenser tubes .....Copper

Special Features
Units available with Freon.

*Ratings given under standard A.S.R.E. conditions, but expressed in B.t.u.'s per hr.

YORK

York Ice Machinery Corp., York, Pa.

Model No.	422 FW	424 FW	426 FW	428 FW	442 FW	444 FW	422 FA	424 FA	426 FA
Overall Dimensions (in.)									
Width	33	33	35	35	44	45	36¼	36¼	36¼
Depth	16¾	16¾	18	18	24	25	23¼	25¼	26¼
Height	28	28	29	29	41½	43½	26¼	26¼	26¼
Compressor Specifications									
Compressor speed (r.p.m.)	375	500	375	500	265	300	400	300	400
No. of cylinders	2	2	2	2	2	2	2	2	2
Bore (in.)	2⅝	2⅝	2⅝	2⅝	4	4	2⅝	2⅝	2⅝
Stroke (in.)	1¼	1¼	2½	2½	3	4	1¼	2½	2½
Motor size (hp.)	¾	1	1½	2	3	5	1	1½	2
Quantity of refrigerant in system (lbs.)	6	7	10	12	20	30	6	8	11
Quantity of lubricant in system (lbs.)	6	6	6	6	20	20	6	6	6

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Compressor
Type of system .....Conventional
Type of compressor .....Reciprocating
Compressor drive .....Belt
Type of shaft seal .....York Balanseal
Cylinder head cooled by.....Air
Type of lubrication system....Centri-force & splash

Condenser & Liquid Receiver
Method of cooling.....W models—water; A models—air
Type of condenser.....W models—shell & coil; A models—finned tube
Has receiver fusible safety plug.....Yes
Type of liquid receiver.....Horizontal

Refrigerant
Kind used .....Freon

Motor
Make of motor .....Century

Control
Make of control....Minneapolis-Honeywell
Type of control .....Pressure
High pressure cut-out.....On all models
Point of operation of cut-out.....185 lbs.
Condensing water flow controlled by Condensing pressure
Type of overload cut-out.....Thermal

Valves
Type of discharge valve.....Disc
Type of suction valve.....Disc
Type of water valve.....Penn

Materials Used
Cylinder block .....Nickel iron
Pistons .....Nickel iron
Condenser tubes .....Copper
Condenser shell .....Steel

HOWE

Howe Ice Machine Co., 2825 Montrose Ave., Chicago, Ill.

Model No.	MW 120	MW 140	MW 240	MW 260	MW 280	MW 390	MW 3120
Overall Dimensions (in.)							
Width	42	48	48	48	48	48	48
Depth	18	18	18	18	18	22	22
Refrigeration Capacity							
In lbs. I.M.E. per 24 hrs.*	400	800	800	1200	1600	1800	2400
Compressor Specifications							
Compressor speed (r.p.m.)	300	600	300	450	600	450	600
No. of cylinders	1	1	2	2	2	3	3
Bore (in.)	2	2	2	2	2	2	2
Stroke (in.)	2	2	2	2	2	2	2
Motor size (hp.)	⅓	½	½	¾	1	1½	2

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Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive .....Belt
Cylinder head cooled by.....Air

Condenser & Liquid Receiver
Method of cooling .....Water
Type of condenser.....Finned coil in steel shell
Type of liquid receiver.....Horizontal

Refrigerant
Kind used.....Methyl chloride

Control
Type of control.....Pressure
High pressure cut-out.....On all models
Condensing water flow controlled by .....Head pressure

Valves
Type of discharge valve.....Disc
Type of suction valve.....Disc
Type of water valve.....Pressure

* Rating based on a 22° F. evaporator temperature and 86° F. condensing medium temperature.

ICEMASTER

Icemaster Co., 114 Hale St., Haverhill, Mass.

Model No.	BK M22	BKA M22	XB MP22	XBA MP22	B M23
Overall Dimensions (in.)					
Width	33	33	33	33	42
Depth	21½	21½	22	22	25
Height	26	26	28	28	28
Refrigeration Capacity					
In lbs. I.M.E. per 24 hrs.	450	575	900	1200	1650
Compressor Specifications					
Compressor speed (r.p.m.)	350	425	300	425	300
No. of cylinders	2	2	2	2	2
Bore (in.)	2⅛	2⅛	2⅛	2⅛	3
Stroke (in.)	2	2	3¼	3¼	3
Quantity of lubricant in system (lbs.)	3	3	3½	3½	5
Pump down capacity of receiver (lbs.)	7	7	10	10	14
Motor size (hp.)	1/2	3/4	1	1-1/2	2
Quantity of refrigerant in system (lbs.)	7	7	10	10	14

Compressor
Type of system .....Conventional
Type of compressor .....Reciprocating
Compressor drive .....Belt
Type of shaft seal .....Bellows
Cylinder head cooled by .....Air
Type of lubrication system .....Splash

Condenser & Liquid Receiver
Method of cooling .....Air
Type of condenser .....Finned tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....No

Motor
Make of motor.....Wagner & Century

Refrigerant
Kind used .....Methyl chloride

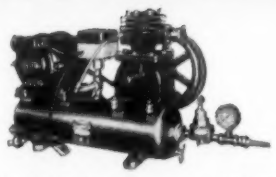
Control
Make of control .....Mercoid
Type of control .....Temperature

Valves
Type of discharge valve .....Flapper
Type of suction valve .....Disc

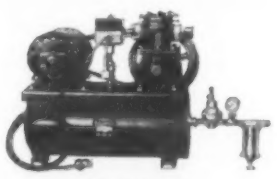
Materials Used
Cylinder block .....Cast iron
Pistons .....Cast iron
Condenser tubes .....Copper
Condenser shell .....Steel

Let the SPECIALISTS★ *do both* BEER *jobs . . .*

PRESSURE EQUIPMENT



Model 5B2 **$59.50**
Two keg outfit. Automatic (adjustable) pressure control, 30—40 lbs.



Model 8B3
Three keg outfit. Automatic (adjustable) pressure control, 30—40 lbs.
$76.50
less filter
$69.50

Model B14
Ten keg outfit. Automatic (adjustable) pressure control, 30—40 lbs.
$99.50
less filter
$92.50

★ **Brunner Is a Veteran At Building Equipment For Beer Dispensing . . .**

A *good* glass of beer! A growing multitude is on the march for properly drawn, properly cooled beer.

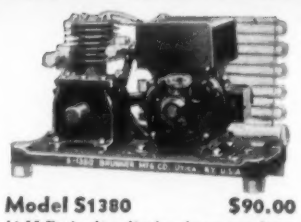
Brunner Beer Pumps have all the refinements which up-to-date beer dispensing requires: *noiseless . . . automatic . . . sanitary . . . complete*, ready for use—just plug into the nearest lamp socket. *Incidentally, Brunner-Air beer dispensing costs about one-twentieth as much as does carbonic gas.*

Brunner Refrigeration Units, too, are the last word in dependable and thrifty beer dispensing. Why? Because they're designed specifically for the job in hand. Sturdily built . . . efficient . . . priced *right*—Brunner Refrigeration Equipment is the logical companion of Brunner Beer Pumps for today's markets. A complete range of sizes ⅙ to 1½ H. P.

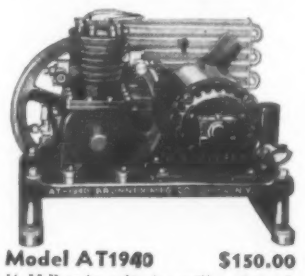
Complete data gladly sent without obligation or cost.

BRUNNER MANUFACTURING COMPANY
UTICA, N. Y.

REFRIGERATION UNIT



Model S1380 **$90.00**
¼ H.P. single cylinder, large condenser, receiver capacity, especially adapted for beverage coolers.



Model AT1940 **$150.00**
⅓ H.P. twin cylinder, will cool 5 gallons of beer per hour using Sweet water bath. Capacity greater when used with Temprite or similar instantaneous coolers.

Model AT3360 **$200.00**
½ H.P. twin cylinder. Will cool 10 gallons of beer per hour using Sweet water bath. Capacity greater when used with Temprite or similar instantaneous coolers.

BRUNNER BEER EQUIPMENT

KELVINATOR

Kelvinator Corp., Detroit, Mich.

Model No.	CB 150	CB 160	FB 120	FB 121	WFB 130	WFB 131	FB 140	FB 141	WFB 150	WFB 151	RB 120	WRB 130	RB 140	WRB 150	WRD 120	WRD 140	WRD 150	CB 220	CB 240	WCB 250	FB 221	WFB 231
Overall Dimensions (in.)																						
Width	16⅜	27½	37⅝	29⅜	37⅝	30⅝	37⅝	29⅜	37⅝	30⅝	40¾	39⅝	40¾	39⅝	50	50	50	16⅞	27½	27	29⅜	30⅝
Depth	16¾	16¾	18⅞	18⅞	16½	15⅜	18⅞	18⅞	16½	15⅜	21¼	17⅞	22	17⅞	24⅝	24⅝	24⅝	16⅝	16¾	14¼	18⅞	15⅜
Height	12⅝	17⅜	21½	21½	21⅜	21½	21½	21½	21⅜	21½	26⅝	26⅝	26⅝	26⅝	25⅝	25⅝	25⅝	12¼	17⅝	17⅜	21½	21½
Refrigeration Capacity																						
In lbs. I.M.E. per 24 hrs.	200	249	355	355	413	413	530	530	541	541	760	902	1060	1285	1540	2100	2570	145	180	200	355	413
Compressor Specifications																						
Compressor speed (r.p.m.)	640	810	310	310	360	360	450	450	485	485	280	330	400	490	280	400	490	465	575	640	310	360
No. of cylinders	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4	2	2	2	2	2
Bore (in.)	1¼	1¼	—		1-13/16	—			1-13/16	—	2¼	2¼	2¼	2¼	2⅛	2⅛	2⅛	1½	1¼	1¼	— 1-13/16	—
Stroke (in.)	1½	1½	2½	2½	2½	2½	2½	2½	2½	2½	3½	3½	3½	3½	3½	3½	3½	1½	1½	1½	2½	2½
Motor size (hp.)	1/4	1/3	1/3	1/3	1/3	1/3	1/2	1/2	1/2	1/2	3/4	3/4	1	1	1-1/2	2	3	1/4	1/3	1/3	1/2	1/2
Quantity of refrigerant in system (lbs.)	2.0	4.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	8.0	8.6	3.0	8.0	16.0	16.0	16.0	2.0	4.5	4.5	6.0	6.0
Pump down capacity of receiver (lbs.)	4.1	16.0	29.6	24.2	26.8	22.5	29.6	24.2	26.8	22.5	39.8	34.8	39.8	34.8	56.0	56.0	56.0	4.1	16.0	13.7	24.2	22.5
Quantity of lubricant in system (lbs.)	1.625	1.625	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	3.375	3.375	3.375	3.375	8.0	8.0	8.0	1.625	1.625	1.625	2.25	2.25

Model No.	FB 242	WFB 252	RB 210	WRB 220	RB 230	WRB 240	WRD 220	RB 310	WRB 320	RB 330	WRB 340	WRB 350	WRD 320	WRD 340	WRD 240	CB 320	CB 340	WCB 350	FB 310	WFB 320	FB 342	WFB 352
Overall Dimensions (in.)																						
Width	38¾	37⅝	40¾	39⅝	40¾	39⅝	50	40¾	39⅝	40¾	39⅝	39⅝	50	50	50	17	27½	27	37⅝	37⅝	38¾	37⅝
Depth	21⅝	17⅞	22	17⅞	22	17⅞	24⅝	22	17⅞	22	17⅞	17⅞	24⅝	24⅝	24⅝	16⅜	16¾	14¼	18⅞	16⅜	21⅜	17⅞
Height	25	25	26⅝	26⅝	26⅝	26⅝	25⅝	26⅝	26⅝	26⅝	26⅝	26⅝	25⅝	25⅝	25⅝	12⅝	17⅝	17⅝	21½	25	25	25
Refrigeration Capacity																						
In lbs. I.M.E. per 24 hrs.	460	541	610	738	825	1015	1472	905	1056	1291	1566	1920	2065	3130	2028	238	311	345	476	548	695	822
Compressor Specifications																						
Compressor speed (r.p.m.)	400	490	240	280	330	400	280	240	280	330	400	490	280	400	400	465	575	640	270	310	400	490
No. of cylinders	2	2	2	2	2	2	4	2	2	2	2	2	4	4	4	2	2	2	2	2	2	2
Bore (in.)	— 1-13/16	—	2¼	2¼	2¼	2¼	2¼	2¼	2¼	2¼	2¼	2¼	2¼	2¼	2¼	1¾	1¾	1¾	—	1-13/16	—	
Stroke (in.)	2½	2½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	1½	1½	1½	2½	2½	2½	2½
Motor size (hp.)	3/4	3/4	1	1	1-1/2	1-1/2	2	1	1	1-1/2	1-1/2	2	2	3	3	1/4	1/3	1/3	1/2	1/2	3/4	3/4
Quantity of refrigerant in system (lbs.)	8.0	8.0	8.0	8.0	8.0	8.0	16.0	8	8	8	8	8	16	16	16	2	4	4	6	6	8	8
Pump down capacity of receiver in (lbs.)	39.8	34.8	39.8	34.8	39.8	34.8	56.0	39.8	34.8	39.8	34.8	34.8	56	56	56	4.1	16	13.7	29.7	34.8	39.8	34.8
Quantity of lubricant in system (lbs.)	2.25	2.25	3.375	3.375	3.375	3.375	8.0	3.375	3.375	3.375	3.375	3.375	8	8	8	1.625	1.625	1.625	2.25	2.25	2.25	2.25

Compressor
Type of system .....Conventional
Type of compressor.....Reciprocating
Compressor drive .....Belt
Type of shaft seal .....Bellows
Cylinder head cooled by....Models CB150, CB220, CB320—air; W models—water; others—refrigerant
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....W models—water; others—air
Type of condenser.....Water-cooled models—spiro-coil; air-cooled models—finned tube
Type of liquid receiver.....Models FB121, WFB131, FB141, WFB151, FB220, WFB230—horizontal; others—vertical

Refrigerant
Kind used.....Series 100 & 200—sulphur dioxide; series 300—methyl chloride

Control
Make of control.....Models CB150,DB220—Ranco; others—Kelvinator
Type of control...Pressure or temperature
High pressure cut-out...On all models but CB150 & CB220
Point of operation of cut-out.....Series 100 & 200—135 lbs.
Condensing water flow controlled by Head pressure
Type of overload cut-out.....Thermal

Valves
Type of discharge valve.....Reed
Type of suction valve.....Reed
Type of water valve.....Diaphragm

Materials Used
Cylinder block .....Cast iron
Pistons .....Cast iron
Condenser tubes .....Copper
Condenser shell .....Steel

LIPMAN

General Refrigeration Sales Co., Beloit, Wis.

Model No.	52	53	72	73	102	103	152	153	202	203	41	51	61	81	101	151	210	310	410	1110	710-V
Overall Dimensions (in.)																					
Width	31¾	31¾	31¾	31¾	31¾	31¾	34½	34½	34½	34½	22⅝	25	30¼	30¼	36½	36½	43½	52¾	56	68½	57¾
Depth	19	18	19	20	19	20	21¼	24	22½	24	14¼	19	19¼	19¼	21½	21½	20½	20½	26¼	30	26¼
Height	23½	23½	23½	23½	23½	23½	25½	25½	25½	25½	20¾	21¾	24½	26½	33½	36	46¼	46¼	53	66	55½
Refrigeration Capacity																					
In lbs. I.M.E. per 24 hrs.	585	620	760	860	950	1090	1320	1525	1800	2065	....	....	....	....	....	....	....	....	....	....	....
Compressor Specifications																					
Compressor speed (r.p.m.)	250	265	320	350	400	460	310	360	425	490	450	450	450	450	350	450	350	450	270	235	400
No. of cylinders	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	2	2	2	2
Bore (in.)	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	1½	1⅜	2	2¼	2½	2¼	2¼	2¼	3¼	4½	3¼
Stroke (in.)	2	2	2	2	2	2	3¼	3¼	3¼	3¼	1½	1½	1½	1½	2¼	2¼	2¼	2¼	3½	5	3½
Motor size (hp.)	1/2	1/2	3/4	3/4	1	1	1-1/2	1-1/2	2	2	1/3	1/2	1/2	3/4	1	1-1/2	2	3	5	10	7-1/2
Quantity of refrigerant in system (lbs.)	6	6	6	6	8	8	10	10	12	12	5½	6½	10	12	12½	20	25	35	50	135	75
Quantity of lubricant in system (qts.)	4	4	4	4	4	4	4	4	4	4	....	....	....	....	....	....	....	....	....	....	....

* * *

Compressor
Type of system .....Conventional
Type of compressor .....Reciprocating
Compressor drive .....Belt
Type of shaft seal.....Bellows
Cylinder head cooled by.....Methyl models—air; ammonia models—water
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....Models 52, 72, 102, 152, 202—air; others—water
Type of condenser.....Methyl units, air cooled—finned tube, water cooled—double tube; ammonia units, models 41 through 151—cylindrical submerged type; others—shell & tube
Type of liquid receiver.....Series 41 through 151—integral with crankcase; others—horizontal

Refrigerant
Kind used.....Models 52, 53, 72, 73, 152, 153, 202, 203—methyl chloride; others—ammonia

Control
Make of control....Methyl units—Genuine Detroit Mercoid
Type of control.....Methyl units—pressure; ammonia units—temperature
High pressure cut-out.....All models
Condensing water flow controlled by Head pressure
Type of discharge valve.....Ammonia units—poppet; methyl units—disc
Type of suction valve.....Ammonia units—poppet; methyl units—disc
Type of overload cut-out.....Thermal

Materials Used
Cylinder block .....Semi-steel
Pistons .....Cast iron
Condenser tubes.....Methyl units—copper & seamless steel; ammonia units—charcoal iron
Condenser shell .....Semi-steel

BAKER

Baker Ice Machine Co., Omaha, Neb.

Model No.	M A1	M A2	M A3	MH A1	MH A2	MH A3	MW A3	MWH A3	M B4	M B5	MH B4	MH B5	MW B4	MW B5	MWH B4	MWH B5	M C6	MH C6	MW C6	MW C7	MWH C6	MWH C7
Overall Dimensions (in.)																						
Width	29¾	29¾	29¾	29¾	29¾	29¾	29¾	29¾	29¾	30⅝	30⅝	32¼	29¾	30¾	30¾	32¼	41¾	41¾	41¾	41¾	41¾	41¾
Depth	17	17¾	17¾	17¼	17¼	18¾	18½	20	19½	21	21	23¼	20½	22	22	24¼	24	25	24	25	25	25
Height	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	24½	24½	24½	24½	24½	24½
Compressor Specifications																						
Compressor speed (r.p.m.)	226	283	450	226	283	450	454	454	382	457	382	357	300	328	408	486	218	218	231	272	231	272
No. of cylinders	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Bore (in.)	1⅞	1⅞	1⅞	1⅞	1⅞	1⅞	1⅞	1⅞	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	3	3	3	3	3	3
Stroke (in.)	1½	1½	1½	1½	1½	1½	1½	1½	1¾	1¾	1¾	1¾	1¾	1¾	1¾	1¾	3	3	3	3	3	3
Motor size (hp.)	1/4	1/3	1/2	1/3	1/2	3/4	1/2	3/4	3/4	1	1	1-1/2	3/4	1	1	1-1/2	1-1/2	2	1-1/2	2	2	3
Quantity of refrigerant in system (lbs.)	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	6	6	6	6	6	6

* * *

Compressor
Type of system .....Conventional
Type of compressor .....Reciprocating
Compressor drive .....V-belt
Type of shaft seal.....Cooke frictionless
Cylinder head cooled by.....Air
Type of lubrication system.....Forced

Condenser & Liquid Receiver
Method of cooling.....W models—water; others—air
Type of condenser.....W models—double tube; others—radiator
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....Yes

Motor
Make of motor .....Wagner

Refrigerant
Kind used .....Methyl chloride

Control
Make of control.....Penn
Type of control...Pressure or temperature
High pressure cut-out.....On all models
Condensing water flow controlled by Water-regulating valve

Valves
Type of discharge valve.....Poppet
Type of suction valve .....Poppet

Materials Used
Cylinder block .....Semi-steel
Pistons .....Semi-steel
Condenser tubes .....Copper

DICELER

Deissler Machine Co., Greenville, Pa.

Model No.	A 400	AW 2600	AW 2800	AW 3800	AW 3900	AW 4000	AW 4500	AW 5000
Overall Dimensions (in.)								
Width	17½	21	22½	29	29	29	33	33
Depth	14¾	16½	16½	20	20	20	22	22
Height	12	16½	16½	21	24	24	24	24
Refrigeration Capacity								
In lbs. I.M.E. per 24 hrs.	153	310	493	664	826	1128	1835	2590
Compressor speed (r.p.m.)	388	450	525	375	475	425	490	425
No. of cylinders	1	2	2	4	4	4	4	2
Bore (in.)	1⅝	1⅝	1⅝	1⅝	1⅝	2	2	3
Stroke (in.)	1⅝	1⅝	1⅝	1⅝	1⅝	2⅛	2⅛	3
Motor size (hp.)	1/4	1/3	1/2	3/4	1	1-1/2	2	2
Quantity refrigerant in system (lbs.)	3	5	7	8	8	10	10	10
Pump down capacity of receiver in lbs. of refrigerant	6	12	15	18	18	18	24	24
Quantity lubricant in system (lbs.)	¾	2¼	2½	4½	5	7	7	7

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive .....Belt
Type of shaft seal.....Bellows
Cylinder head cooled by..Models 2600AW, 2800AW—air & water; others—air
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....Model 400A—air; models 2600AW, 2800AW, 3800AW, 3900AW, 4000AW—air & water; models 4500AW, 5000AW—water
Type of condenser....Air-cooled models—finned tube; air- & water-cooled models—finned tube & double tube; water-cooled models—double tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug....Models 4500AW, 5000AW—yes; others—no

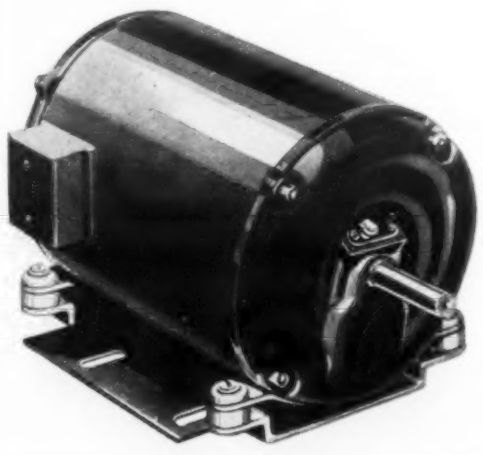
Motor
Make of motor .....Century

Refrigerant
Kind used.....Methyl chloride

Control
Make of control .....Penn
Type of control.....Pressure
High pressure cut-out.....All models
Point of operation of cut-out.....150 lbs.
Condenser water flow controlled by Pressure

Valves
Type of discharge valve.....Disc
Type of suction valve.....Disc
Type of water valve.....Penn

Materials Used
Cylinder block.....Nickeled iron
Pistons .....Cast iron
Condenser tubes .....Copper
Condenser shell .....Copper



You Can Now Have A BUILT-IN CAPACITOR MOTOR with
110-220 Volt Interchangeable Single Phase

Howell engineering adds another feature to the built-in capacitor motor in making possible its use with either 110 or 220 volts by a slight change in connections.

This exclusive Howell feature is added to the other desirable Howell features such as simplicity of parts (capacitor is mounted inside the motor frame), quiet operation, protected frame, high efficiency and high starting torque.

Let our engineers show you how Howell motors are particularly adapted to the needs of commercial refrigeration machines as well as domestic units.

Howell Electric Motors Co., Howell, Mich.

Pioneer Builders of Capacitor Start Motors

Howell Sales and Service in over 50 Principal Cities

AUDIFFREN

Audiffren Refrigerating Sales Co. 9 Codding St., Providence, R. I.

Model No.	6	4	3
Overall Dimensions (in.)			
Width	142½	114	93½
Depth	65½	57	42
Height	55	51½	44½
Refrigeration Capacity			
In lbs. I.M.E. per 24 hours	3000	1500	750
Compressor Specifications			
Compressor speed (r.p.m.)	160	220	330
No. of cylinders	2	2	2
Bore (in.)	5-1/16	3⅞	2-9/16
Stroke (in.)	3-5/32	2-7/32	1-9/16
Quantity of lubricant in system (lbs.)	35	15	5
Motor size (hp.)	5	3	1½
Quantity of refrigerant in system (lbs.)	49½	19½	9¾

Compressor
Type of system .....Hermetic
Type of compressor .....Reciprocating
Compressor drive .....Belt
Cylinder head cooled by....Splash cooling system
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling .....Water
Type of condenser .....Drum
Does receiver have fusible safety plug .....When required

Motor
Make of motor .....Optional

Refrigerant
Kind used .....Sulphur dioxide

Control
Make of control.....Allen-Bradley
Type of control.....Temperature
Type of high pressure cut-out...Temperature & gravity
Point of operation of cut-out.....90 lbs.
Condensing water flow controlled by Float-operated shutoff
Type of overload cut-out.....Magnetic

Valves
Type of discharge valve.....Feather
Type of suction valve.....Ports in oscillating cylinders
Type of water valve..Balanced float valve

Materials Used
Cylinder block.....Cast iron
Pistons .....Cast iron
Condenser shell .....Bronze

Special Features
Compressor, condenser, & evaporator incorporated in self-contained, hermetically sealed rotor.

AMERICAN ACE

Summerheat Corp. of America Dowagiac, Mich.

Model No.	100
Overall Dimensions (in.)	
Width	18¾
Depth	24
Height	19½
Refrigeration Capacity	
In lbs. I.M.E. per 24 hours	500
Compressor Specifications	
Compressor speed (r.p.m.)	1750
No. of cylinders	2
Bore (in.)	1¼
Stroke (in.)	⅞
Motor size (hp.)	½
Quantity refrigerant in system (lbs.)	8
Quantity of lubricant in system (lbs.)	5

Compressor
Type of system .....Hermetic
Type of compressor .....Reciprocating
Compressor drive .....Direct
Cylinder head cooled by .....Air
Type of lubrication system .....Splash

Condenser & Liquid Receiver
Method of cooling .....Air
Type of condenser .....Finned tube
Type of liquid receiver.....Horizontal

Motor
Make of motor .....General Electric

Refrigerant
Kind used .....Methyl chloride

Control
Make of control.....General Electric
Type of control.....Optional
High pressure cut-out.....All models
Type of overload cut-out..General Electric

Valves
Type of discharge valve.....Disc

Materials Used
Cylinder block .....Semi-steel
Pistons .....Brass
Condenser tubes .....Copper
Condenser shell .....Copper

GIBSON

Gibson Electric Refrigerator Corp., Greenville, Mich.

Model No.	G251	G332	G332W	G502	G502W	G752	G752W	G1002	G1002W	G1502	G1502W	G2002W	G2003W	G3003W	G5003W	G7503W	G10003W
Overall Dimensions (in.)																	
Width	24	24	24	29½	29½	29½	29½	36	36	36	36	36½	51	51	51	56	56
Depth	14¼	16	16	18	18	18	18	23½	23½	23½	23½	23½	24½	23	23¼	28	28
Height	19¼	19¼	19¼	21½	21½	21½	21½	28	28	28	28	26½	29	29	29½	35	35
Refrigeration Capacity																	
In lbs. I.M.E. per 24 hrs.	113	264	324	423	538	509	643	835	972	958	1157	1157	2016	2844	4812	8160	9120
Compressor Specifications																	
Compressor speed (r.p.m.)	320	320	320	320	360	360	430	275	275	320	400	400	400	480	480	345	400
No. of cylinders	1	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3
Bore (in.)	1.8125	1.8125	1.8125	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.5	2.25	3.25	3.0	3.0
Stroke (in.)	1½	1½	1½	1½	1½	1½	1½	3	3	3	3	3	3	3	3	4	4
Motor size (hp.)	¼	⅓	⅓	½	½	¾	¾	1	1	1½	1½	2	2	3	5	4¼	4¼
Quantity of refrigerant in system (lbs.)	2½	3½	3½	4	4½	4½	5	8	8	8	8	8	12	12	12	7½	10
Quantity of lubricant in system (pts.)	⅝	2½	2½	2½	2½	2½	2½	6	6	6	6	6	12	12	12	16	16

* * *

Compressor
Type of system .....Conventional
Type of compressor .....Reciprocating
Compressor drive .....Belt
Type of shaft seal .....Bellows
Cylinder head cooled by....Models W2003, W3003, W5003—water; others—air
Type of lubrication system.....Splash

Motor
Make of motor .....Wagner

Refrigerant
Kind used.....Models G7503W & G10003W —Freon; others—methyl chloride

Condenser & Liquid Receiver
Method of cooling.....W models—water; others—air
Type of condenser.....W models—double tube; others—radiator
Type of liquid receiver....Models 251, 332, W332, W752, 1002, W1002 —vertical; others—horizontal
Has receiver fusible safety plug....Models 251, 332, W332—no; others—yes

Valves
Type of discharge valve.....Disc
Type of suction valve.....Disc
Type of water valve.....Pressure

Control
Make of control.....Tagliabue or Penn
Type of control.....Pressure
High pressure cut-out.....All models
Point of operation of cut-out.....150 lbs.
Condensing water flow controlled by Pressure
Type of overload cut-out.....Models 251, 332, W332, 502, W502, 703, W752—fuse; others—thermal cutout

Materials Used
Cylinder block .....Semi-steel
Pistons .....Semi-steel
Condenser tubes .....Copper

COPELAND

Copeland Sales Co., Mt. Clemens, Mich.

Model No.	IC-1	IC-2	IC-3	AM	Q	QW	R	RW	W	X	WA	XA	Y
Overall Dimensions (in.)													
Width	14	14	21⅝	21	28¼	28¼	28¼	28¼	38½	38½	39¼	39¼	47½
Depth	14½	14½	11⅝	17	17⅞	14¾	17⅞	14¾	18½	18½	23⅞	23⅞	21⅜
Height	25½	25¼	26⅛	16	19	18⅝	19	18⅝	27¼	27¼	24¾	24¾	30
Refrigeration Capacity													
In lbs. I.M.E. per 24 hours	99	212	488	212	246	246	488	488	776	1073	776	1073	2375
Compressor speed (r.p.m.)	360	360	440	360	440	440	440	440	250	365	250	365	365
No. of cylinders	1	1	2	1	1	1	2	2	2	2	2	2	3
Bore (in.)	1½	2	2	2	2	2	2	2	2¼	2¼	2¼	2¼	2¼
Stroke (in.)	1½	1½	1½	1½	1½	1½	1½	1½	3	3	3	3	4
Motor size (hp.)	⅓	¼	⅓	¼	⅓	½	½	½	¾	1	1	1½	2
Quantity of refrigerant in system (lbs.)	2	2	2	2	5	5	5	5	5	5	5	5	10
Pump down capacity of receiver (lbs.)	2	2	2	2	5	5	5	5	5	5	5	5	10
Quantity of lubricant in system (pts.)	⅝	⅝	1¾	⅝	⅞	⅞	1¾	1¾	7	7	7	7	7

* * *

Compressor
Type of system .....Conventional
Type of compressor .....Reciprocating
Compressor drive .....Belt
Type of shaft seal .....Bellows
Cylinder head cooled by.....Model Y—water; others—air
Type of lubrication system .....Splash

Condenser & Liquid Receiver
Method of cooling .....Models WA, XA, AM, Q, R, IC-1, IC-2, & IC-3—air; others—water
Type of condenser.....Air-cooled models—finned tube; water-cooled models—shell & tube
Type of liquid receiver....Models RW, Y, QW, Q, & R—horizontal; others—vertical
Has receiver fusible safety plug...Models AM, Q, QW, & R—no; others—yes

Motor
Make of motor .....Delco

Refrigerant
Kind used .....Methyl chloride

Control
Make of control.....Penn or Bishop & Babcock
Type of control...Pressure or temperature
High pressure cut-out.....Models QW, RW, W, WA, X, XA, & Y
Point of operation of cut-out.....175 lbs.
Condensing water flow controlled by Regulating valve

Valves
Type of discharge valve .....Disc
Type of suction valve .....Disc
Type of water valve .....Pressure

Materials Used
Cylinder block .....Semi-steel
Pistons .....Semi-steel
Condenser tubes .....Copper
Condenser shell .....Steel

MAYFLOWER

Trupar Mfg. Co., 140 Davis Ave., Dayton

Model No.	260	350	520	750	1000	1003
Overall Dimensions (in.)						
Width	25	29¼	29¼	37¼	37¼	37¼
Depth	16¼	18½	18½	20	20	20
Height	19	20	21½	22½	26	26
Refrigeration Capacity						
In lbs. I.M.E. per 24 hrs.	250	350	500	750	1000	1200
Compressor Specifications						
Compressor speed (r.p.m.)	500	500	310	450	350	485
No. of cylinders	2	2	2	2	2	2
Bore (in.)	1⅝	1⅝	2½	2½	2½	2½
Stroke (in.)	1¾	2	2½	2½	3	3
Motor size (hp.)	1/3	1/2	3/4	1	1-1/2	2
Quantity of refrigerant in system (lbs.)	4	6	6	7	7	7
Pump down capacity of receiver (lbs.)	10	16	16	20	20	20
Quantity of lubricant in system (pts.)	1	1	1¾	1¾	2	2

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive .....Belt
Type of shaft seal.....Diaphragm
Cylinder head cooled by..Water on water-cooled models—air on air-cooled models
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....Air or water
Type of condenser.....Finned tube on air-cooled models; copper tube on water-cooled models
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....Yes

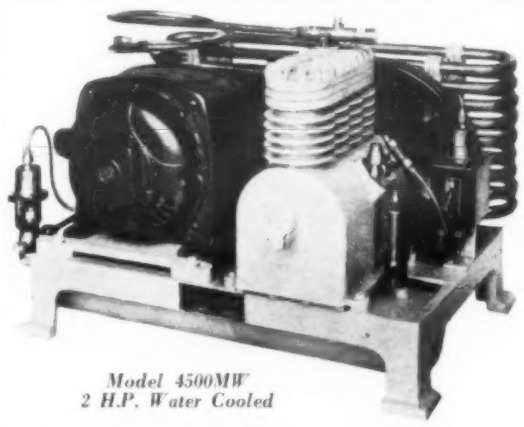
Motor
Make of motor.....Master

Refrigerant
Kind used.....Sulphur dioxide or methyl chloride

Control
Make of control.....Tagliabue or Minneapolis-Honeywell
Type of control...Pressure or temperature
High pressure cut-out.....All models
Point of operation of cut-out.....Model 1003—155 lbs.; others—135 lbs.
Condensing water flow controlled by Electrically
Type of overload cut-out.....Fuse

Valves
Type of discharge valve.....Disc
Type of suction valve.....Disc
Type of water valve.....Solenoid

Materials Used
Cylinder block .....Cast iron
Pistons .....Cast iron
Condenser tubes .....Copper



Model 4500MW
2 H.P. Water Cooled

DICELER
DEISSLER MACHINE CO. GREENVILLE, PA. U.S.A.

CONDENSING UNITS Have achieved a nation wide reputation for every commercial application from 1/6 H.P. to 3 H.P.

NEW HEAVY DUTY FOUR CYLINDER COMPRESSOR Illustrated on the left is the latest DICELER development. In designing this compressor, as in all DICELER equipment, every operating contingency has been taken into consideration and adequate protection provided against it.

KEEP MODERN WITH DICELER REFRIGERATION COMPRESSORS

If you are not already acquainted with DICELER compressors and condensing units, you owe it to yourself to write at once.

DEISSLER MACHINE COMPANY
Greenville, Pa.

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KEOKUK

Keokuk Refrigerating Co., Keokuk, Iowa

Model No.	DV	HV350	HV500	B750	B1000	B2000
Overall Dimensions (in.)						
Width	23	26	26	40	40	40
Depth	16½	18½	18½	23	23	23
Height	19	18½	18½	26	26	26
Refrigeration Capacity						
In lbs. I.M.E. per 24 hrs.	210	350	500	750	1000	2000
Compressor speed (r.p.m.)	530	415	580	240	320	460
No. of cylinders	1	2	2	2	2	2
Bore (in.)	2	2	2	2½	2½	2½
Stroke (in.)	1½	1½	1½	3	3	3
Motor size (hp.)	1/4	1/3	1/2	3/4	1	2

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive .....V-belt
Type of shaft seal.....Keokuk
Cylinder head cooled by.....Air
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....Air
Type of condenser.....Radiator
Type of liquid receiver.....Vertical

Motor
Make of motor .....Century

Refrigerant
Kind used.....Sulphur dioxide

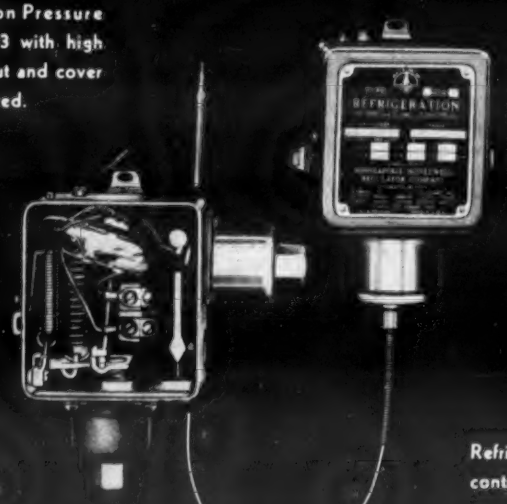
Control
Make of control.....Penn
Type of control .....Pressure
Type of overload cut-out.....Pressure

Valves
Type of discharge valve.....Poppet
Type of suction valve.....Disc

Materials Used
Cylinder block .....Alloy iron
Pistons .....Alloy iron
Condenser tubes .....Tinned copper

Special Features
Patented oil control in receiver through self-regulating float.

REFRIGERATION CONTROLS



Refrigeration Pressure control L-413 with high pressure cutout and cover removed.

Refrigeration Temperature control T-414 for remote control.

FOR EVERY PURPOSE

THERE is a Minneapolis-Honeywell refrigeration control for every purpose, specifically designed to meet the exacting requirements of each function. . . . They are adaptable to all types of commercial installations, industrial processes, to breweries or beer dispensing equipment, as well as to air conditioning applications of all kinds. . . . Minneapolis-Honeywell Refrigeration Controls are available in models with all desired temperature and pressure ranges, and all provide the efficient, simple and trouble-free operation characteristic of other Minneapolis-Honeywell Controls. . . . Visible scales, locking and leveling devices, Con-Tac-Tor Mercury Switches, extreme sensitivity and accuracy, and sturdy, simple construction, all contribute to the performance of Minneapolis-Honeywell Refrigeration Controls for every purpose. . . . Minneapolis-Honeywell Regulator Company, 2807 Fourth Avenue South, Minneapolis, Minnesota.

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Control Systems

Testing Service
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Testing and experimental laboratory service for Manufacturer, Distributor, Central Station. Test data exclusive property of client.

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Economical in Cost

Ace Hard Rubber Equipment for Refrigerated Display Cabinets

Doors—Door Frames—Slide Rails
Jambs—Glazing Strips—Trim.
Many standard and special sizes.
Send for catalogue and prices.

American Hard Rubber Company
11 Mercer Street, New York, N. Y.
Akron, Ohio—111 W. Washington St., Chicago, Ill.

STARR

Starr Co., Richmond, Ind.

Model No.	B-SA*	B5SA	B7MA	B3MA	B9SA	B13SA	B11MA	B2SW	B6SW	B4MW	B8MW	B10SW	B12MW	D1SA	D3MA	D5SA	DD9SA	D7MA	DD11MA	DD13SA	D3MW	D8MW	D2SW	DD12MW	DD10SW	J4MA	J2MA	J1SA	J3SA	SJ4MA	SJ2MA	SJ1SA	SJ3SA	AOSA	A1SA	A3MA	A2SA	E3MA	E1SA	E4MW	E7MA	E5SA	E2SW	E8MW	E6SW
Overall Dimensions (in.)																																												
Width	25½	25½	29	29	29½	29½	29½	31	31	31	31	32½	32½	32½	17	17	17	17	17½	18¾	18¾	34	34	35	35																			
Depth	18	18	19	19	16½	16½	16½	21¾	21¾	24½	24½	20	20	20	14½	14½	14½	14½	14	14	14	25	25	19¾	19¾																			
Height	15¾	15¾	18	18	22	22	22	24¾	24¾	24¾	24¾	25¾	25¾	25¾	12⅝	12⅝	12⅝	12⅝	12¾	14½	14½	27	27	29	29																			
Refrigeration Capacity																																												
In lbs. I.M.E. per 24 hrs.																																												
(M models)	263	354	443	639	505	537	771	589	842	1230	...	682	500	1558	127	187	64	84	....	....	180	1751	2264	2100	2868																			
(S models)	253	317	360	462	320	400	462	444	571	745	1000	474	700	1000	98	139	49	70	95	130	130	1298	1618	1390	1885																			
Compressor Specifications																																												
Compressor speed (r.p.m.)																																												
(M models)	300	400	500	750	425	550	750	350	500	733	...	350	500	733	500	600	500	600	....	....	408	350	425	350	475																			
(S models)	400	500	600	750	400	500	750	350	450	600	800	350	500	733	550	650	550	650	300	408	408	350	425	350	475																			
No. of cylinders	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	1	1	1	2	2	2	2																			
Bore (in.)	1.64	1.64	1.64	1.64	1.64	1.64	1.64	2.125	2.125	2.125	2.125	2.125	2.125	2.125	1⅛	1⅛	1⅛	1⅛	1.64	1.64	1.64	3	3	3	3																			
Stroke (in.)	1.625	1.625	1.625	1.625	1.625	1.625	1.625	2.0	2.0	2.0	2	2	2	2	1¼	1¼	1¼	1¼	1.625	1.625	1.625	3	3	3	3																			
Motor size (hp.)																																												
(M models)	⅛	⅛	⅛	¾	⅛	⅛	¾	¾	1	1½	...	¾	1	1½	⅛	⅛	⅛	⅛	...	...	¼	2	3	2	3																			
(S models)	⅛	⅛	⅛	¾	¼	⅛	⅛	½	¾	1	⅛	⅛	⅛	⅛	¼	1½	2	1½	2	2	½	¾	1	⅛	½																			
Quantity of refrigerant in system (lbs.)																																												
(M models)	3	3½	4½	4½	4½	4½	4½	4	5	7	...	4	5	7	1½	1½	1	1	....	....	1½	8½	10	8½	12																			
(S models)	4	6	6	6	4	6	6	5	6	6	6	5	5	7	2	2	1½	1½	2	2	2	12	15	12	18																			

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....SJ & J models—diaphragm; others—bellows
Cylinder head cooled by.....A models—air; W models—water
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....A models—air; W models—water
Type of condenser.....Air-cooled models—finned tube; water-cooled models—counter flow
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....On special order

Refrigerant
Kind used.....Methyl chloride or sulphur dioxide

Control
Make of control.....Penn
Type of control...Pressure or temperature
High pressure cut-out.....All models
Point of operation of cut-out.....Methyl chloride—150 lbs.; sulphur dioxide—135
Condensing water flow controlled by Penn automatic water valve
Type of overload cut-out...High pressure

Valves
Type of discharge valve.....SJ, J, & E models—disc; others—reed
Type of suction valve.....Disc
Type of water valve.....Penn

Materials Used
Cylinder block.....Cast iron
Pistons.....Cast iron
Condenser tubes.....Seamless copper
Condenser shell.....Seamless steel
Quantity of lubricant in system.....B models—22 oz.; D models—4 pts.; SJ & J models—14 oz.; A models—15 oz.; E models—7½ pts.

*M models—methyl chloride; S models—sulphur dioxide.

Larkin Vacuum Plate Coil
Opens New Sales Field

AMONG the many uses of the Larkin Vacuum Plate Coil is for cafes, delicatessen and other stores selling salads, cold meat plates and all perishable foods. The coil (pictured above) is installed right in the show case and a fluffy white frost gives a cool and appetizing appearance to the display.

Stock sizes available from 4" to 34" by 14' in length. Special sizes from 37" to 58" wide by 199" long.

Send for special literature and prices. This Larkin Plate Coil offers ready sales to live, hustling dealers and distributors.

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Refrigerating Corporation

Originator and Manufacturers
ATLANTA, GA., U.S.A

U.S. PATENT No. 1,776,238.

100% VERTICAL SURFACE
LARKIN COILS

FRICK

Frick Co., Waynesboro, Pa.

Model No.	P251	P332	FW332	F502	FW 502	F 752	FW 752	F 1002	FW 1002	F 1502	FW 1502	FW 2003	FW 3003	1½
Overall Dimensions (in.)														
Width	14¼	16	16	18	18	18	18	23½	23½	23½	23½	23	23	43½
Length	24	24	24	29½	29½	29½	29½	36	36	36	36	51	51	18½
Height	19¼	19¼	19¼	21½	21½	21½	21½	28	28	28	28	29	29	49
Refrigeration Capacity														
In lbs. I.M.E. per 24 hrs.*	112.8	249.6	324.0	422.4	537.6	508.8	643.2	835.2	972.0	957.6	1156.8	2016.0	2844.0	1000
Compressor Specifications														
Compressor speed (r.p.m.)	320	320	320	320	360	360	430	275	320	320	400	400	480	...
No. of cylinders	1	2	2	2	2	2	2	2	2	2	2	3	3	2
Bore (in.)	1.8125	1.8125	1.8125	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.5	2.5	1.5
Stroke (in.)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0	3.0	3.0	3.0	1.5
Motor size (hp.)	1/4	1/3	1/3	1/2	1/2	3/4	3/4	1	1	1-1/2	1-1/2	2	3	1
Quantity of refrigerant in system (lbs.)	2½	3½	3½	4	4½	4½	5	8	8	8	8	12	12	...
Quantity of lubricant in system (pts.)	¾	2½	2½	2½	2½	2½	2½	6	6	6	6	12	12	...

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Model 1½—direct; others—V-belt
Type of shaft seal.....Sealing surface revolves with shaft and seals against a polished seat on housing cover
Cylinder head cooled by.....Model 1½—water; others—air
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....Models FW332, FW502, FW752, FW1002, FW1502, FW2003, FW3003, 1½—water; others—air
Type of condenser.....Water-cooled models—coil; air-cooled models—radiator; model 1½—shell & tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....Models F1002, FW1002, F1502 FW1502, FW2003, FW3003—yes; others—no

Motor
Make of motor.....Model 1½—Fairbanks-Morse; others—Wagner

Refrigerant
Kind used.....Model 1½—ammonia; others—methyl chloride

Control
Make of control.....Model 1½—Bradley; others—Tagliabue
Type of control.....Model 1½—temperature; others—pressure
High pressure cut-out.....All models
Point of operation of cut-out.....135 lbs.
Condensing water flow controlled by Pressure

Valves
Type of discharge valve.....Model 1½—Poppet; others—disc
Type of suction valve.....Model 1½—Poppet; others—disc
Type of water valve.....Penn

Materials Used
Cylinder block.....Model 1½—semi-steel; others—cast iron
Pistons.....Model 1½—semi-steel; others—cast iron
Condenser tubes.....Model 1½—steel; others—copper
Condenser shell.....Model 1½—steel; others—copper

*Air-cooled units rated at discharge pressure corresponding to 104° F.

WURLITZER

The Rudolph Wurlitzer Mfg. Co., North Tonawanda, N. Y.

Model No.	CA33	EA33	FA33	FW33	HA33	HW33	IA33	IW33	JA	JW	KW	MW	NW	OW
Overall Dimensions (in.)														
Width	22¼	24	29½	32½	36	36	36	45	36	36	51	51	56	56
Depth	13¼	18	18	18	23½	23½	23½	23½	23½	23½	23	23¼	28	28
Height	16½	20½	21	21	26½	27½	26½	27½	26½	27½	29	29½	35	35
Refrigeration Capacity														
In lbs. I.M.E. per 24 hrs.	168	240	355	415	653	700	818	979	1020	1392	2016	4812	8160	9120
Compressor speed (r.p.m.)	430	490	540	590	325	...	400	470	540	660	400	480	345	400
No. of cylinders	1	2	2	2	2	2	2	2	2	2	3	3	3	3
Bore (in.)	1⅜	1½	1¾	1¾	2½	2½	2½	2½	2½	2½	2½	3¼	4	4
Stroke (in.)	1¼	1¼	1¼	1¼	1¾	1¾	1¾	1¾	1¾	1¾	3	3	4¼	4¼
Motor size (hp.)	¼	½	½	½	¾	¾	1	1	...	1½	2	5	7½	10
Quantity of refrigerant in system (lbs.)	2	3	3	3	8	8	8	8	8	8	12	12	16	16

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....V-belt
Type of shaft seal.....Bellows
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....W models—water; A models—air
Type of condenser.....W models—double tube; A models—air
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....Yes

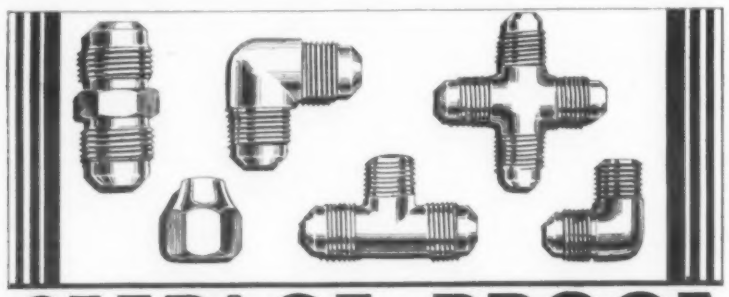
Motor
Make of motor.....Wagner

Refrigerant
Kind used.....Methyl chloride

Control
Make of control.....Tagliabue, Penn, Detroit Lubricator
Type of control...Pressure or temperature
Condensing water flow controlled by Automatic water valve
Type of overload cut-out.....In starting switch
Type of high pressure cut-out.....Dual control
Point of operation of high pressure cut-out.....150 lbs.

Valves
Type of discharge valve.....Disc
Type of water valve.....Pressure

Materials Used
Cylinder block.....Cast iron
Pistons.....Cast iron
Condenser tubes.....Copper
Condenser shell.....Copper



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WHEN NEEDED

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Our hot-forge department has recently been enlarged by the addition of specially designed equipment enabling us to produce forged seepage proof fittings in immense quantities.

Every Commonwealth fitting for this industry is produced either from forgings or extruded rod, with especial care as to machining (seats and threads), inspection and packing.

We are pleased to have inquiries for specials and will quote promptly on receipt of print, sketch or sample

SEND FOR CATALOG NO. 36

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COMMONWEALTH BRASS CORPORATION
COMMONWEALTH AVE. AND G.T.R.R.
DETROIT

CARRIER

Carrier Products Corp., Newark, N. J.

Model No.	AM 50-14	AM 50-13	AM 51-13	AM 51-12	AM 52-34	AM 52-10	AM 53-15	WM 51-13	WM 51-12	WM 52-34	WM 52-10	WM 53-15	WM 53-30	WM 54-30
Overall Dimensions (in.)														
Width	23½	23½	32⅞	32⅞	36¼	36¼	40½	35½	35½	39¼	39¼	43⅜	43⅜	43⅜
Depth	15⅝	15⅝	21⅝	21⅝	22¾	22¾	26	17¼	17¼	18⅝	18⅝	22¼	22¼	22½
Height	16	16	23¾	23¾	27	27	31	24½	24½	25	25	32	32	32⅝
Refrigeration Capacity														
In lbs. I.M.E. per 24 hours	212	268	282	387	588	737	1120	387	523	817	990	1570	1935	2900
Compressor Specifications														
Compressor speed (r.p.m.)	340	430	225	310	255	320	250	310	420	355	430	350	430	430
No. of cylinders	1	1	2	2	2	2	2	2	2	2	2	2	2	2
Bore (in.)	1⅞	1⅞	1⅞	1⅞	2½	2½	3	1⅞	1⅞	2½	2½	3	3	3
Stroke (in.)	2	2	2	2	2	2	2⅝	2	2	3	2	2⅝	2⅝	2⅝
Motor size (hp.)	¼	½	½	½	¾	1	1½	½	½	¾	1	1½	2	3
Quantity of refrigerant in system (lbs.)	3	3½	3½	4½	4½	8	12	4	4½	5	8	12	12	15
Pump down capacity of receiver (lbs.)	4.5	4.5	5.5	5.5	19.0	19.0	19	8	8	13	13	25	25	30
Quantity of lubricant in system (lbs.)	2.9	2.9	3.7	3.7	3.7	3.7	7.0	3.7	3.7	3.7	3.7	7.0	7.0	10.0

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Bellows (Carrier)
Cylinder head cooled by.....Air
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....AM models—air cooled; WM models—water cooled
Type of condenser.....Finned tube on AM models; shell & coil on WM models
Type of liquid receiver.....Horizontal

Refrigerant
Kind used.....Methyl chloride or Freon

Motor
Make of motor.....Wagner

Control
Make of control.....Tagliabue
Type of control.....Pressure
High pressure cut-out.....Bellows snap-action high pressure cut-out on WM
Point of operation of cut-out.....125 lbs.
Condensing water flow controlled by Pressure
Type of overload cut-out.....Thermal

Valves
Type of discharge valve.....Plate
Type of suction valve.....Disc
Type of water valve.....Bellows actuated

Materials Used
Cylinder block.....Nickel alloy semi-steel
Pistons.....Crucible iron
Condenser tubes.....Copper
Condenser shell.....Steel

Special Features
Receivers are fitted with a liquid level indicator. Air cooled models have the air circulating fan and condenser enclosed in an "air transformer."

ZEROZONE

Zerozone Products Corp., 205 E. 42nd St., New York City

Model No.	A 1312	A 1416	A 2425	A 3333	A 3450	A 4375	A 44100	A 53150	A 54200	W 3333	W 3450	W 4375	W 44100	W 53150	W 54200
Overall Dimensions (in.)															
Width	19½	19½	25¾	30¼	30¼	37½	37½	43½	43½	30¼	30¼	37½	37½	43½	43½
Depth	17	17	18	20¼	20¼	23¼	23¼	26½	26½	20¼	20¼	23¼	23¼	26½	26½
Height	14½	14½	18½	19½	19½	24½	24½	28¼	28¼	19½	19½	24½	24½	28¼	28¼
Refrigeration Capacity															
In lbs. I.M.E. per 24 hrs.	94	129	237	275	450	617	850	1284	1716	326	531	732	974	1466	1983
Compressor Specifications															
Compressor speed (r.p.m.)	340	400	400	255	380	285	370	280	390	275	420	300	390	310	425
No. of cylinders	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
Bore (in.)	1½	1½	1¾	1⅞	1⅞	2¼	2¼	2¾	2¾	1⅞	1⅞	2¼	2¼	2¾	2¾
Stroke (in.)	1⅝	1⅝	1¾	1¾	1¾	2½	2½	3¼	3¼	1¾	1¾	2½	2½	3¼	3¼
Motor size (hp.)	⅛	⅙	¼	⅓	½	¾	1	1½	2	⅓	½	¾	1	1½	2
Quantity of refrigerant in system (lbs.)	2	2	2	2	4	6	6	8	8	2	4	6	6	8	8
Pump down capacity of receiver in lbs.	3½	3½	4¾	4¾	4¾	16½	16½	21½	21½	4¾	4¾	16½	16½	21½	21½
Quantity of lubricant in system (lbs.)	1	1	1⅛	1½	1½	4	4	8	8	1½	1½	4	4	4	8

* * *

Compressor

Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Bellows
Cylinder head cooled by.....A models—air; W models—water
Type of lubrication system.....Splash

Condenser & Liquid Receiver

Method of cooling.....A models—air; W models—water
Type of condenser.....A models—finned tube; W models—double tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....W models—yes; others—no

Motor

Make of motor.....Models A1312, A1416, & A2425—G-E, Wagner, or Century; others—Wagner or Century

Refrigerant

Kind used.....Methyl chloride

Control

Make of control.....Models A1312, A1416, & A2425—Ranco; others—Penn
Type of control.....Pressure-temperature
High pressure cut-out.....All models but A1312, A1416, & A2425
Condensing water flow controlled by.....Pressure
Type of overload cut-out.....Models A1312, A1416, A2425, A53150, A54200, A53150, W54200—thermal; others—fuse

Valves

Type of discharge valve.....Reed
Type of suction valve.....Disc
Type of water valve.....Bellows

Materials Used

Cylinder block.....Cast iron
Pistons.....Cast iron
Condenser tubes.....Copper
Condenser shell.....Steel

FROSKIST

Parker Mfg. Co., 2625 Santa Fe Ave., Los Angeles, Calif.

Model No.	A620	A1625	A1633	A2033	A2250	A4075 Air	A4075 Water	A6010 Air	A6010 Water	A6015 Air	A6015 Water	A1002 Air	A1002 Water	A1003 Air	A1003 Water
Overall Dimensions (in.)															
Width	20	18	18	18	18	24	24	24	24	24	24	31	31	31	31
Depth	14	22½	22½	29	29	33	33	33	33	33	33	37	37	37	37
Height	13	16	16	17	17	27	27	27	27	27	27	26	26	26	26
Refrigeration Capacity															
In lbs. I.M.E. per 24 hrs.* (Using SO_2)	85	165	225	300	400	711	750	732	765	1025	1080	1345	1404	1905	1988
(Using CH_3Cl)	100	198	270	360	480	935	975	955	980	1350	1410	1752	1828	2482	2590
Compressor Specifications															
Compressor speed (r.p.m.)	350	350	400	350	400	425	425	300	300	425	425	300	300	425	425
No. of cylinders	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Bore (in.)	1¼	1¾	1¾	2	2¼	2⅛	2⅛	2⅛	2⅛	3¼	3¼	3	3	3	3
Stroke (in.)	1	1½	1½	1¼	1¼	2¼	2¼	2¼	2¼	5	5	3	3	3	3
Motor size (hp.)	1/6	1/4	1/3	1/3	1/2	3/4	3/4	1	1	1-1/2	1-1/2	2	2	3	3
Quantity of refrigerant in system (lbs.) (Using SO_2)	2	3	3	6	6	8	8	10	10	10	10	14	14	14	14
(CH_3Cl)	1	2	2	4	4	6	6	8	8	8	8	10	10	10	10
Pump down capacity of receiver in lbs. (Using CH_3Cl)	1½	2¼	2¼	10	10	12¼	12¼	12¼	12¼	12¼	12¼	23	23	23	23
(Using SO_2)	3	4	4	14-1/3	14-1/3	18¼	18¼	18¼	18¼	18¼	18¼	35	35	35	35
Quantity lubricant in system (pts.)	¾	1	1	1¼	1¼	5	5	5	5	5	5	8	8	8	8

* * *

Compressor

Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Sylphon
Cylinder head cooled by.....Air-cooled models—air; water-cooled models—water
Type of lubrication system.....Splash

Condenser & Liquid Receiver

Method of cooling.....Models A620, A1625, A1633, A2033, A2250—air; others—as designated
Type of condenser.....Models A620, A1625—single pass; models A1633, A2033, A2250, A4075 (air), A6010 (air), A6015 (air)—double pass; models A1002 (air), A1003 (air)—triple pass; all water-cooled models—double pipe
Type of liquid receiver.....Models A620, A1625, A1633—vertical; others—horizontal
Has receiver fusible safety plug.....No

Motor

Make of motor.....General Electric

Refrigerant

Kind used.....Methyl chloride (CH_3Cl) or sulphur dioxide (SO_2)

Control

Make of control.....Bishop & Babcock or Penn
Type of control.....Pressure
Type of high pressure cut-out.....Lowside
Point of operation of cut-out.....140 lbs.
Condensing water flow controlled by.....Pressure
Type of overload cut-out.....General Electric

Valves

Type of discharge valve.....Disc
Type of suction valve.....Disc
Type of water valve.....Penn

Materials Used

Cylinder block.....Cast iron
Pistons.....Cast iron
Condenser tubes.....Copper
Condenser shell.....Copper

*Manufacturer's rating. Based on 75° F. air temperature or 65° F. condensing water temperature.

KULAIR

Kulair Products Corp., 2415 Chestnut St., Philadelphia, Pa.

Model No.	MA 014	MA 013	MA 113	MA 112	MA 234	MA 210	MA 315	MW 113	MW 112	MW 234	MW 210	MW 315	MW 320	MW 430
Overall Dimensions (in.)														
Width	23½	23½	33	33	36¼	36¼	40½	35½	35½	39¼	39¼	43½	43½	44
Depth	15¾	15¾	21½	21½	22¾	22¾	26	18	18	18⅜	18⅜	22¼	22¼	23¼
Height	16	16	23¾	23¾	27	27	31	24⅜	24⅜	25	25	32	32	32½
Refrigeration Capacity														
In lbs. I.M.E. per 24 hrs.	240	304	317	437	639	802	1182	395	536	800	1000	1488	2033	3050
Compressor Specifications														
Compressor speed (r.p.m.)	340	430	225	310	255	320	250	280	380	320	400	315	430	430
No. of cylinders	1	1	2	2	2	2	2	2	2	2	2	2	2	3
Bore (in.)	1⅞	1⅞	1⅞	1⅞	2½	2½	3	1⅞	1⅞	2½	2½	3	3	3
Stroke (in.)	2	2	2	2	2	2	2⅝	2	2	2	2	2⅝	2⅝	2⅝
Motor size (hp.)	¼	⅓	½	½	¾	1	1½	⅓	½	¾	1	1½	2	3
Quantity of refrigerant in system (lbs.)	3	3½	3½	4½	4½	8	12	4	4½	5	8	12	12	15
Quantity of lubricant in system (lbs.)	1.9	1.9	1.9	2.4	2.4	2.4	5.1	2.4	2.4	2.4	2.4	5.1	5.1	7.5

* * *

Compressor

Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Bellows
Cylinder head cooled by.....Air
Type of lubrication system.....Splash

Condenser & Liquid Receiver

Method of cooling.....MA models—air; MW models—water
Type of condenser.....MA models—finned coil; MW models—shell & tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....No

Motor

Make of motor.....Wagner

Refrigerant

Kind used.....Methyl chloride

Control

Make of control.....Tagliabue
Type of control.....Pressure
High pressure cut-out.....All water-cooled models
Condensing water flow controlled by.....Automatic water valve
Type of overload cut-out.....High pressure

Valves

Type of discharge valve.....Disc
Type of suction valve.....Disc

Materials Used

Cylinder block.....Semi-steel
Pistons.....Cast iron
Condenser tubes.....Copper
Condenser shell.....Seamless steel

PHOENIX

Phoenix Ice Machine Co., 2711 Church Ave., Cleveland, Ohio

Model No.	PAC	PAE	PAF	PWP	PAH	PWH	PAI	PWI	PAJ	PWJ	PWK	PWL	PWM	E	EE	K
Overall Dimensions(in.)																
Width	22¼	24	29½	32½	36	36	36	45	36	36	51	51	51	54	60	60
Depth	13¾	18	18	18	23½	23½	23½	23½	23½	23½	24½	23	23¼	30	32	42
Height	16½	20½	21	21	26½	27½	26½	27½	28	28	29	29	29½	47	52	64
Refrigeration Capacity																
In lbs. I.M.E. per 24 hrs.	168	240	355	415	653	700	818	979	958	1157	2016	2844	4812	1840	3680	5400
Compressor Specifications																
Compressor speed (r.p.m.)	430	490	540	590	325	...	400	470	320	400	400	480	480	400	400	400
No. of cylinders	1	2	2	2	2	2	2	2	2	2	3	3	3	1	2	2
Bore (in.)	1¾	1½	1¾	1¾	2½	2½	2½	2½	2¼	2¼	2½	2½	3¼	2¾	2¾	3
Stroke (in.)	1¼	1¼	1¼	1¼	1¾	1¾	1¾	1¾	3	3	3	3	3	2½	2½	3
Motor size (hp.)	¼	½	⅓	½	¾	¾	1	1	1½	1½	2	3	5	2	3	5
Quantity of refrigerant in system (lbs.)	2	3	3	3	8	8	8	8	8	8	12	12	12	25	50	75

* * *

Compressor

Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....V-belt
Type of shaft seal.....Models E, EE, & K—rotary; others—bellows
Cylinder head cooled by.....Models PWK, PWL, PWM, E, EE, & K—waters; others—air
Type of lubrication system.....Splash

Condenser & Liquid Receiver

Method of cooling.....DW, E, & K models—water; other—air
Type of condenser...PA models—radiator; PW models—double tube; E & K models—shell & tube
Has receiver fusible safety plug.....E & K models—no; others—yes
Type of liquid receiver.....Horizontal

Refrigerant

Kind used.....E & K models—ammonia; others—methyl chloride

Control

Make of control.....Tagliabue, Penn, Detroit Lubricator
High pressure cut-out.....All models
Point of operation of cut-out.....Methyl models—150 lbs.; ammonia—225 lbs.
Type of control...Pressure or temperature
Condensing water flow controlled by.....Pressure regulator
Type of overload cut-out.....Thermal

Valves

Type of discharge valve.....Disc
Type of suction valve.....Poppet
Type of water valve....Pressure actuated

Materials Used

Cylinder block.....Cast iron
Pistons.....Cast iron
Condenser tubes.....Steel
Condenser shell.....Steel

BRUNNER

Brunner Mfg. Co., Utica, N. Y.

Model No.	AT 2540	AT 3360	WT 3360	AT 7290	WT 7290	AT 9620	WT 9620	AT 12680	WT 12680
Overall Dimensions (in.)									
Width	28	28	28	36	36	36	36	36	36
Depth	18	18	18	24½	24½	24½	24½	24½	24½
Height	19	19	19	22½	22½	22½	22½	22½	22½
Refrigeration Capacity									
In. lbs. I.M.E. per 24 hrs.	240	335	335	672	672	917	917	1283	1283
Compressor Specifications									
Compressor speed (r.p.m.)	375	525	525	275	275	375	375	525	525
No. of cylinders	2	2	2	2	2	2	2	2	2
Bore (in.)	1⅝	1⅝	1⅝	2½	2½	2½	2½	2½	2½
Stroke (in.)	1⅜	1⅜	1⅜	2	2	2	2	2	2
Motor size (hp.)	1/3	1/2	1/2	3/4	3/4	1	1	1-1/2	1-1/2
Quantity of refrigerant in system (lbs.)	4	4	4	8	8	12	12	12	12
Pump down capacity of receiver in lbs.	5	5	5	13	13	13	13	13	13
Quantity of lubricant in system (lbs.)	1½	1½	1½	5	5	5	5	5	5

* * *

Compressor

Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Bellows
Cylinder head cooled by.....Air
Type of lubrication system.....Splash

Condenser & Liquid Receiver

Method of cooling.....A models—air; W models—water
Type of condenser.....A models—finned tube; W models—double tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....No

Motor

Make of motor.....Wagner

Refrigerant

Kind used.....Methyl chloride

Control

Make of control.....Detroit Lubricator
Type of control...Pressure or temperature
High pressure cut-out...On W models only
Point of operation of cut-out.....130 lbs.
Condensing water flow controlled by.....Automatic water valve
Type of overload cut-out...Models AT9620, WT9620, AT12680, WT12680—in magnetic starter; others—none

Valves

Type of discharge valve.....Flex leaf
Type of suction valve.....Flex leaf
Type of water valve.....Pressure

Materials Used

Cylinder block.....Nickel iron
Pistons.....Nickel iron
Condenser tubes.....Copper
Condenser shell.....Copper

VILTER

Vilter Mfg. Co., Milwaukee, Wis.

Model No.	3	5	10	15	20	30
Overall Dimensions (in.)						
Width	20	20	14	26	26	15
Depth	36	36	36	48	48	54
Height	29	29	25	30	30	26
Refrigeration Capacity						
In lbs. I.M.E. per 24 hours	276	424	848	1320	1740	2620
Compressor Specifications						
Compressor speed (r.p.m.)	1750	1750	1150	1750	1750	860
No. of cylinders	1	1	1	1	1	1
Quantity of refrigerant in system (lbs.)	4	4	8	10	10	15
Motor size (hp.)	1/3	1/2	1	1-1/2	2	3
Quantity of lubricant in system (lbs.)	3.6	3.6	5.4	11	29	11

Compressor

Type of system.....Conventional
Type of compressor.....Rotary
Compressor drive.....Direct
Type of shaft seal.....Metal-to-metal
Cylinder head cooled by.....Oil
Type of lubrication system.....Models 15, 20, 30—forced; models 3, 5, 10—splash

Condenser & Liquid Receiver

Method of cooling.....Models 15, 20, 3, 5—Air; models 30, 10—water
Type of condenser.....Models 15, 20, 3, 5—radiator; models 30, 10—shell & tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....No

Refrigerant

Kind used.....Models 15, 20, 3, 5—Freon; models 30, 10—ammonia

Control

Make of control.....Penn
Type of control.....Suction pressure
Condensing water flow controlled by.....Discharge pressure
Type of overload cut-out....Allen-Bradley

Valves

Type of discharge valve.....Feather
Type of water valve.....Penn

Materials Used

Cylinder block.....Semi-steel
Pistons.....Steel
Condenser tubes.....Models 15, 30, 3, 5—Copper; models 30, 10—seamless steel
Condenser shell.....Models 30, 10—seamless steel

Special Features

Three moving parts; all oil cooled.

WESTINGHOUSE

Westinghouse Electric & Mfg. Co. Mansfield, Ohio

Model No.	AS-12	AS-25	AS-50
Overall Dimensions (in.)			
Width	18¾	18¾	18½
Depth	18¾	23¾	30
Height*	17	17	27¼
Refrigeration Capacity			
In lbs. I.M.E. per 24 hrs.	96	192	384
Compressor Specifications			
Compressor speed (r.p.m.)	1750	1750	1750
No. of cylinders	1	2	4
Bore (in.)	1	1	1
Stroke (in.)	⅞	⅞	⅞
Motor size (hp.)	1/8	1/4	1/2
Quantity of refrigerant in system (lbs.)	2½	4	8
Quantity of lubricant in system (lbs.)	2	2½	5¾

Compressor

Type of system.....Hermetic
Type of compressor.....Reciprocating
Compressor drive.....Direct
Cylinder head cooled by..Refrigerant gas
Type of lubrication system.....Splash

Condenser & Liquid Receiver

Method of cooling.....Air
Type of condenser.....Radiator
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....Yes

Motor

Make of motor.....Westinghouse

Refrigerant

Kind used.....Sulphur dioxide

Control

Make of control.....Westinghouse
Type of control.....Temperature
High pressure cut-out.....All models
Point of operation of cut-out.....180 lbs.
Type of overload cut-out.....Spencer thermostat

Valves

Type of discharge valve.....Flapper
Type of suction valve.....Flapper

Materials Used

Cylinder block.....Semi-steel
Pistons.....Nytrided tool steel
Condenser tubes.....Copper

*Includes 5¾ in. legs which can be removed.

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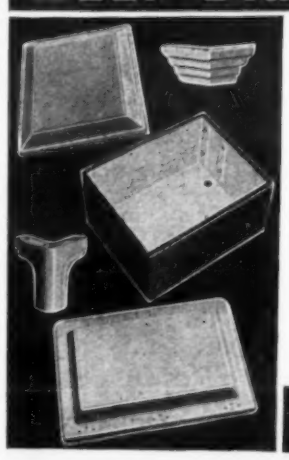

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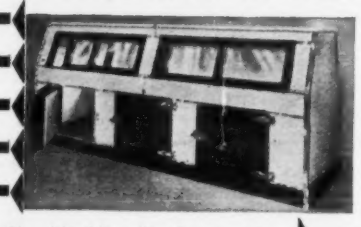

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STARR

Starr Co., Richmond, Ind.

Model No.	B-SA*	B5SA	B3MA	B9SA	B7MA	B13SA	B11MA	B2SW	B4MW	B6SW	B8MW	B10SW	B12MW	D1SA	D3MA	D5SA	D7MA	DD9SA	DD11MA	DD13SA	D3MW	D8MW	D2SW	DD12MW	D6SW	DD10SW	J4MA	J2MA	J1SA	J3SA	SJ4MA	SJ2MA	SJ1SA	SJ3SA	AOSA	A1SA	E3MA	A3MA	A2SA	E1SA	E4MW	E7MA	E5SA	E2SW	E8MW	E6SW
Overall Dimensions (in.)																																														
Width	25½	25½	29	29	29½	29½	29½	31	31	31	31	32½	32½	32½	17	17	17	17½	18¾	18¾	34	34	35	35																					
Depth	18	18	19	19	16½	16½	16½	21¾	21¾	24½	24½	20	20	20	14½	14½	14½	14½	14	14	14	25	25	19¾	19¾																					
Height	15¾	15¾	18	18	22	22	22	24¾	24¾	24¾	24¾	25¾	25¾	25¾	12⅞	12⅞	12⅞	12⅞	12¾	14½	14½	27	27	29	29																					
Refrigeration Capacity																																														
In lbs. I.M.E. per 24 hrs.																																														
(M models)	263	354	443	639	505	537	771	589	842	1230	...	682	500	1558	127	187	64	84	....	....	180	1751	2264	2100	2868																				
(S models)	253	317	360	462	320	400	462	444	571	745	1000	474	700	1000	98	139	49	70	95	130	130	1298	1618	1390	1885																					
Compressor Specifications																																														
Compressor speed (r.p.m.)																																														
(M models)	300	400	500	760	425	550	750	350	500	733	...	350	500	733	500	600	500	600	....	....	408	350	425	350	475																					
(S models)	400	500	600	750	400	500	750	350	450	600	800	350	500	733	550	650	550	650	300	408	408	350	425	350	475																					
No. of cylinders	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	1	1	1	2	2	2	2																					
Bore (in.)	1.64	1.64	1.64	1.64	1.64	1.64	1.64	2.125	2.125	2.125	2.125	2.125	2.125	2.125	1⅛	1⅛	1⅛	1⅛	1.64	1.64	1.64	3	3	3	3																					
Stroke (in.)	1.625	1.625	1.625	1.625	1.625	1.625	1.625	2.0	2.0	2.0	2	2	2	2	1¼	1¼	1¼	1¼	1.625	1.625	1.625	3	3	3	3																					
Motor size (hp.)																																														
(M models)	¼	⅛	½	¾	⅛	½	¾	¾	1	1½	...	¾	1	1½	⅛	½	⅛	⅛	...	...	¼	2	3	2	3																					
(S models)	¼	⅛	½	¾	¼	⅛	½	½	¾	1	⅛	⅛	⅛	⅛	¼	1½	2	1½	2	2	½	¾	1	⅛	⅛																					
Quantity of refrigerant in system (lbs.)																																														
(M models)	3	3½	4½	4½	4½	4½	4½	4	5	7	...	4	5	7	1½	1½	1	1	....	....	1½	8½	10	8½	12																					
(S models)	4	6	6	6	4	6	6	5	6	6	6	5	5	7	2	2	1½	1½	2	2	2	12	15	12	18																					

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....SJ & J models—diaphragm; others—bellows
Cylinder head cooled by.....A models—air; W models—water
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....A models—air; W models—water
Type of condenser.....Air-cooled models—finned tube; water-cooled models—counter flow
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....On special order

Refrigerant
Kind used.....Methyl chloride or sulphur dioxide

Control
Make of control.....Penn
Type of control...Pressure or temperature
High pressure cut-out.....All models
Point of operation of cut-out.....Methyl chloride—150 lbs.; sulphur dioxide—135
Condensing water flow controlled by Penn automatic water valve
Type of overload cut-out...High pressure

Valves
Type of discharge valve.....SJ, J, & E models—disc; others—reed
Type of suction valve.....Disc
Type of water valve.....Penn

Materials Used
Cylinder block.....Cast iron
Pistons.....Cast iron
Condenser tubes.....Seamless copper
Condenser shell.....Seamless steel
Quantity of lubricant in system.....B models—22 oz.; D models—4 pts.; SJ & J models—14 oz.; A models—15 oz.; E models—7½ pts.

*M models—methyl chloride; S models—sulphur dioxide.

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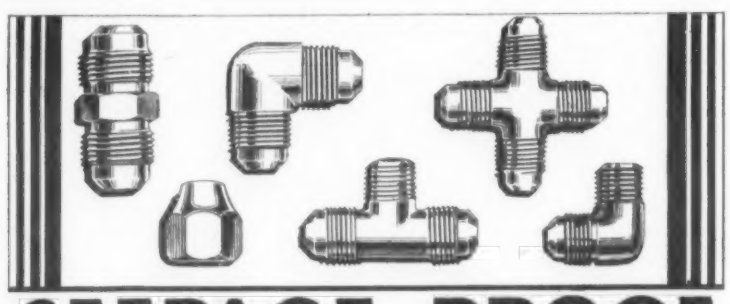

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~BUILT RIGHT TO STAY TIGHT~

COMMONWEALTH BRASS CORPORATION
COMMONWEALTH AVE. AND G.T.R.R.
DETROIT

FRICK

Frick Co., Waynesboro, Pa.

Model No.	F251	F332	FW332	F502	FW 502	F 752	FW 752	F 1002	FW 1002	F 1502	FW 1502	FW 2003	FW 3003	1¼
Overall Dimensions (in.)														
Width	14¼	16	16	18	18	18	18	23½	23½	23½	23½	23	23	43½
Length	24	24	24	29½	29½	29½	29½	36	36	36	36	51	51	18½
Height	19¼	19¼	19¼	21½	21½	21½	21½	28	28	28	28	29	29	49
Refrigeration Capacity														
In lbs. I.M.E. per 24 hrs.*	112.8	249.6	324.0	422.4	537.6	508.8	643.2	835.2	972.0	957.6	1156.8	2016.0	2844.0	1000
Compressor Specifications														
Compressor speed (r.p.m.)	320	320	320	320	360	360	430	275	320	320	400	400	480	...
No. of cylinders	1	2	2	2	2	2	2	2	2	2	2	3	3	2
Bore (in.)	1.8125	1.8125	1.8125	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.5	2.5	1.5
Stroke (in.)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0	3.0	3.0	3.0	1.5
Motor size (hp.)	1/4	1/3	1/3	1/2	1/2	3/4	3/4	1	1	1-1/2	1-1/2	2	3	1
Quantity of refrigerant in system (lbs.)	2½	3½	3½	4	4½	4½	5	8	8	8	8	12	12	...
Quantity of lubricant in system (pts.)	¾	2½	2½	2½	2½	2½	2½	6	6	6	6	12	12	...

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Model 1½—direct; others—V-belt
Type of shaft seal.....Sealing surface revolves with shaft and seals against a polished seat on housing cover
Cylinder head cooled by.....Model 1½—water; others—air
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....Models FW332, FW502, FW752, FW1002, FW1502, FW2003, FW3003, 1½—water; others—air
Type of condenser.....Water-cooled models—coil; air-cooled models—radiator; model 1½—shell & tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....Models F1002, FW1002, F1502 FW1502, FW2003, FW3003—yes; others—no

Motor
Make of motor.....Model 1½—Fairbanks-Morse; others—Wagner

Refrigerant
Kind used.....Model 1½—ammonia; others—methyl chloride

Control
Make of control.....Model 1½—Bradley; others—Tagliabue
Type of control.....Model 1½—temperature; others—pressure
High pressure cut-out.....All models
Point of operation of cut-out.....135 lbs.
Condensing water flow controlled by Pressure

Valves
Type of discharge valve.....Model 1½—Poppet; others—disc
Type of suction valve.....Model 1½—Poppet; others—disc
Type of water valve.....Penn

Materials Used
Cylinder block.....Model 1½—semi-steel; others—cast iron
Pistons.....Model 1½—semi-steel; others—cast iron
Condenser tubes.....Model 1½—steel; others—copper
Condenser shell.....Model 1½—steel; others—copper

*Air-cooled units rated at discharge pressure corresponding to 104° F.

WURLITZER

The Rudolph Wurlitzer Mfg. Co., North Tonawanda, N. Y.

Model No.	CA33	EA33	PA33	FW33	HA33	HW33	IA33	IW33	JA	JW	KW	MW	NW	OW
Overall Dimensions (in.)														
Width	22¼	24	29½	32½	36	36	36	45	36	36	51	51	56	56
Depth	13¼	18	18	18	23½	23½	23½	23½	23½	23½	23	23¼	28	28
Height	16½	20½	21	21	26½	27½	26½	27⅓	26½	27½	29	29½	35	35
Refrigeration Capacity														
In lbs. I.M.E. per 24 hrs.	168	240	355	415	653	700	818	979	1020	1392	2016	4812	8160	9120
Compressor speed (r.p.m.)	430	490	540	590	325	...	400	470	540	660	400	480	345	400
No. of cylinders	1	2	2	2	2	2	2	2	2	2	3	3	3	3
Bore (in.)	1¾	1½	1¾	1¾	2½	2½	2½	2½	2½	2½	2½	3¼	4	4
Stroke (in.)	1¼	1¼	1¼	1¼	1¾	1¾	1¾	1¾	1¾	1¾	3	3	4½	4¼
Motor size (hp.)	¼	⅓	½	½	¾	¾	1	1	...	1½	2	5	7½	10
Quantity of refrigerant in system (lbs.)	2	3	3	3	8	8	8	8	8	8	12	12	16	16

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....V-belt
Type of shaft seal.....Bellows
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....W models—water; A models—air
Type of condenser.....W models—double tube; A models—air
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....Yes

Motor
Make of motor.....Wagner

Refrigerant
Kind used.....Methyl chloride

Control
Make of control.....Tagliabue, Penn, Detroit Lubricator
Type of control...Pressure or temperature
Condensing water flow controlled by Automatic water valve
Type of overload cut-out.....In starting switch
Type of high pressure cut-out.....Dual control
Point of operation of high pressure cut-out.....150 lbs.

Valves
Type of discharge valve.....Disc
Type of water valve.....Pressure

Materials Used
Cylinder block.....Cast iron
Pistons.....Cast iron
Condenser tubes.....Copper
Condenser shell.....Copper

CARRIER

Carrier Products Corp., Newark, N. J.

Model No.	AM 50-14	AM 50-13	AM 51-13	AM 51-12	AM 52-34	AM 52-10	AM 53-15	WM 51-13	WM 51-12	WM 52-34	WM 52-10	WM 53-15	WM 53-20	WM 54-20
Overall Dimensions (in.)														
Width	23½	23½	32⅞	32⅞	36¼	36¼	40½	35½	35½	39¼	39¼	43¾	43¾	43¾
Depth	15⅝	15⅝	21⅜	21⅜	22¾	22¾	26	17¼	17¼	18⅝	18⅝	22¼	22¼	25¼
Height	16	16	23¾	23¾	27	27	31	24½	24½	25	25	32	32	32¾
Refrigeration Capacity														
In lbs. I.M.E. per 24 hours	212	268	282	387	588	737	1120	387	523	817	990	1570	1935	2900
Compressor Specifications														
Compressor speed (r.p.m.)	340	430	225	310	255	320	250	310	420	355	430	350	430	430
No. of cylinders	1	1	2	2	2	2	2	2	2	2	2	2	2	2
Bore (in.)	1⅞	1⅞	1⅞	1⅞	2½	2½	3	1⅞	1⅞	2½	2½	3	3	3
Stroke (in.)	2	2	2	2	2	2	2⅝	2	2	2	2	2⅝	2⅝	2⅝
Motor size (hp.)	¼	½	½	½	¾	1	1½	½	½	¾	1	1½	2	3
Quantity of refrigerant in system (lbs.)	3	3½	3½	4½	4½	8	12	4	4½	5	8	12	12	15
Pump down capacity of receiver (lbs.)	4.5	4.5	5.5	5.5	19.0	19.0	19	8	8	13	13	25	25	30
Quantity of lubricant in system (lbs.)	2.9	2.9	3.7	3.7	3.7	3.7	7.0	3.7	3.7	3.7	3.7	7.0	7.0	10.0

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Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Bellows (Carrier)
Cylinder head cooled by.....Air
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....AM models—air cooled; WM models—water cooled
Type of condenser.....Finned tube on AM models; shell & coil on WM models
Type of liquid receiver.....Horizontal

Refrigerant
Kind used.....Methyl chloride or Freon

Motor
Make of motor.....Wagner

Control
Make of control.....Tagliabue
Type of control.....Pressure
High pressure cut-out.....Bellows snap-action high pressure cut-out on WM
Point of operation of cut-out.....125 lbs.
Condensing water flow controlled by Pressure
Type of overload cut-out.....Thermal

Valves
Type of discharge valve.....Plate
Type of suction valve.....Disc
Type of water valve.....Bellows actuated

Materials Used
Cylinder block.....Nickel alloy semi-steel
Pistons.....Crucible iron
Condenser tubes.....Copper
Condenser shell.....Steel

Special Features
Receivers are fitted with a liquid level indicator. Air cooled models have the air circulating fan and condenser enclosed in an "air transformer."

ZEROZONE

Zerozone Products Corp., 205 E. 42nd St., New York City

Model No.	A 1312	A 1416	A 2425	A 3333	A 3450	A 4375	A 44100	A 53150	A 54200	W 3333	W 3450	W 4375	W 44100	W 53150	W 54200
Overall Dimensions (in.)															
Width	19½	19½	25¾	30¼	30¼	37½	37½	43½	43½	30¼	30¼	37½	37½	43½	43½
Depth	17	17	18	20¼	20¼	23¼	23¼	26½	26½	20¼	20¼	23¼	23¼	26½	26½
Height	14½	14½	18½	19½	19½	24½	24½	28¼	28¼	19½	19½	24½	24½	28¼	28¼
Refrigeration Capacity															
In lbs. I.M.E. per 24 hrs.	94	129	237	275	450	617	850	1284	1716	326	531	732	974	1466	1983
Compressor Specifications															
Compressor speed (r.p.m.)	340	400	400	255	380	285	370	280	390	275	420	300	390	310	425
No. of cylinders	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
Bore (in.)	1½	1½	1¾	1⅞	1⅞	2¼	2¼	2¾	2¾	1⅞	1⅞	2¼	2¼	2¾	2¾
Stroke (in.)	1⅝	1⅝	1¾	1¾	1¾	2½	2½	3¼	3¼	1¾	1¾	2½	2½	3¼	3¼
Motor size (hp.)	⅛	⅛	¼	½	½	¾	1	1½	2	½	½	¾	1	1½	2
Quantity of refrigerant in system (lbs.)	2	2	2	2	4	6	6	8	8	2	4	6	6	8	8
Pump down capacity of receiver in lbs.	3½	3½	4¾	4¾	4¾	16½	16½	21½	21½	4¾	4¾	16½	16½	21½	21½
Quantity of lubricant in system (lbs.)	1	1	1⅛	1½	1½	4	4	8	8	1½	1½	4	4	4	8

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Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Bellows
Cylinder head cooled by.....A models—air; W models—water
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....A models—air; W models—water
Type of condenser.....A models—finned tube; W models—double tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....W models—yes; others—no

Motor
Make of motor.....Models A1312, A1416, & A2425—G-E, Wagner, or Century; others—Wagner or Century

Refrigerant
Kind used.....Methyl chloride

Control
Make of control.....Models A1312, A1416, & A2425—Ranco; others—Penn
Type of control.....Pressure-temperature
High pressure cut-out.....All models but A1312, A1416, & A2425 Condensing water flow controlled by Pressure
Type of overload cut-out.....Models A1312, A1416, A2425, A53150, A54200, A53150, W54200—thermal; others—fuse

Valves
Type of discharge valve.....Reed
Type of suction valve.....Disc
Type of water valve.....Bellows

Materials Used
Cylinder block.....Cast iron
Pistons.....Cast iron
Condenser tubes.....Copper
Condenser shell.....Steel

FROSKIST

Parker Mfg. Co., 2625 Santa Fe Ave., Los Angeles, Calif.

Model No.	A620	A1625	A1633	A2033	A2250	—A4075— Air	—A4075— Water	—A6010— Air	—A6010— Water	—A6015— Air	—A6015— Water	—A1002— Air	—A1002— Water	—A1003— Air	—A1003— Water
Overall Dimensions (in.)															
Width	20	18	18	18	18	24	24	24	24	24	24	31	31	31	31
Depth	14	22½	22½	29	29	33	33	33	33	33	33	37	37	37	37
Height	13	16	16	17	17	27	27	27	27	27	27	26	26	26	26
Refrigeration Capacity															
In lbs. I.M.E. per 24 hrs.* (Using SO_2)	85	165	225	300	400	711	750	732	765	1025	1080	1345	1404	1905	1988
(Using CH_3Cl)	100	198	270	360	480	935	975	955	980	1350	1410	1752	1828	2482	2590
Compressor Specifications															
Compressor speed (r.p.m.)	350	350	400	350	400	425	425	300	300	425	425	300	300	425	425
No. of cylinders	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Bore (in.)	1¼	1¾	1¾	2	2¼	2⅛	2⅛	2⅛	2⅛	3¼	3¼	3	3	3	3
Stroke (in.)	1	1¼	1¼	1¼	1¼	2¼	2¼	2¼	2¼	5	5	3	3	3	3
Motor size (hp.)	1/6	1/4	1/3	1/3	1/2	3/4	3/4	1	1	1-1/2	1-1/2	2	2	3	3
Quantity of refrigerant in system (lbs.) (Using SO_2)	2	3	3	6	6	8	8	10	10	10	10	14	14	14	14
(CH_3Cl)	1	2	2	4	4	6	6	8	8	8	8	10	10	10	10
Pump down capacity of receiver in lbs. (Using CH_3Cl)	1½	2¼	2¼	10	10	12¼	12¼	12¼	12¼	12¼	12¼	23	23	23	23
(Using SO_2)	3	4	4	14-1/3	14-1/3	18¼	18¼	18¼	18¼	18¼	18¼	35	35	35	35
Quantity lubricant in system (pts.)	¾	1	1	1¼	1¾	5	5	5	5	5	5	8	8	8	8

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Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Sylphon
Cylinder head cooled by.....Air-cooled models—air; water-cooled models—water
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....Models A620, A1625, A1633, A2033, A2250—air; others—as designated
Type of condenser.....Models A620, A1625—single pass; models A1633, A2033, A2250, A4075 (air), A6010 (air), A6015 (air)—double pass; models A1002 (air), A1003 (air)—triple pass; all water-cooled models—double pipe
Type of liquid receiver.....Models A620, A1625, A1633—vertical; others—horizontal
Has receiver fusible safety plug.....No

Motor
Make of motor.....General Electric

Refrigerant
Kind used.....Methyl chloride (CH_3Cl) or sulphur dioxide (SO_2)

Control
Make of control.....Bishop & Babcock or Penn
Type of control.....Pressure
Type of high pressure cut-out.....Lowside
Point of operation of cut-out.....140 lbs.
Condensing water flow controlled by Pressure
Type of overload cut-out..General Electric

Valves
Type of discharge valve.....Disc
Type of suction valve.....Disc
Type of water valve.....Penn

Materials Used
Cylinder block.....Cast iron
Pistons.....Cast iron
Condenser tubes.....Copper
Condenser shell.....Copper

*Manufacturer's rating. Based on 75° F. air temperature or 65° F. condensing water temperature.

KULAIR

Kulair Products Corp., 2415 Chestnut St., Philadelphia, Pa.

Model No.	MA 014	MA 013	MA 113	MA 112	MA 234	MA 210	MA 315	MW 113	MW 112	MW 234	MW 210	MW 315	MW 320	MW 430
Overall Dimensions (in.)														
Width	23½	23½	33	33	36¼	36¼	40½	35½	35½	39¼	39¼	43½	43½	44
Depth	15¾	15¾	21½	21½	22¾	22¾	26	18	18	18⅜	18⅜	22¼	22¼	23¼
Height	16	16	23¾	23¾	27	27	31	24¾	24¾	25	25	32	32	32½
Refrigeration Capacity														
In lbs. I.M.E. per 24 hrs.	240	304	317	437	639	802	1182	395	536	800	1000	1488	2033	3050
Compressor Specifications														
Compressor speed (r.p.m.)	340	430	225	310	255	320	250	280	380	320	400	315	430	430
No. of cylinders	1	1	2	2	2	2	2	2	2	2	2	2	2	3
Bore (in.)	1⅞	1⅞	1⅞	1⅞	2½	2½	3	1⅞	1⅞	2½	2½	3	3	3
Stroke (in.)	2	2	2	2	2	2	2⅝	2	2	2	2	2⅝	2⅝	2⅝
Motor size (hp.)	¼	⅓	⅓	½	¾	1	1½	⅓	½	¾	1	1½	2	3
Quantity of refrigerant in system (lbs.)	3	3½	3½	4½	4½	8	12	4	4½	5	8	12	12	15
Quantity of lubricant in system (lbs.)	1.9	1.9	1.9	2.4	2.4	2.4	5.1	2.4	2.4	2.4	2.4	5.1	5.1	7.5

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Bellows
Cylinder head cooled by.....Air
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....MA models—air; MW models—water
Type of condenser.....MA models—finned coil; MW models—shell & tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....No

Motor
Make of motor.....Wagner

Refrigerant
Kind used.....Methyl chloride

Control
Make of control.....Tagliabue
Type of control.....Pressure
High pressure cut-out.....All water-cooled models
Condensing water flow controlled by Automatic water valve
Type of overload cut-out....High pressure

Valves
Type of discharge valve.....Disc
Type of suction valve.....Disc

Materials Used
Cylinder block.....Semi-steel
Pistons.....Cast iron
Condenser tubes.....Copper
Condenser shell.....Seamless steel

PHOENIX

Phoenix Ice Machine Co., 2711 Church Ave., Cleveland, Ohio

Model No.	PAC	PAE	PAF	PWP	PAH	PWH	PAI	PWI	PAJ	PWJ	PWK	PWL	PWM	E	EE	K
Overall Dimensions(in.)																
Width	22¼	24	29½	32½	36	36	36	45	36	36	51	51	51	54	60	60
Depth	13¼	18	18	18	23½	23½	23½	23½	23½	23½	24½	23	23¼	30	32	42
Height	16½	20½	21	21	26½	27½	26½	27½	28	28	29	29	29½	47	52	64
Refrigeration Capacity																
In lbs. I.M.E. per 24 hrs.	168	240	355	415	653	700	818	979	958	1157	2016	2844	4812	1840	3680	5400
Compressor Specifications																
Compressor speed (r.p.m.)	430	490	540	590	325	...	400	470	320	400	400	480	480	400	400	400
No. of cylinders	1	2	2	2	2	2	2	2	2	2	3	3	3	1	2	2
Bore (in.)	1⅝	1½	1¾	1¾	2½	2½	2½	2½	2¼	2¼	2½	2½	3¼	2¾	2¾	3
Stroke (in.)	1¼	1¼	1¼	1¼	1⅝	1⅝	1¾	1¾	3	3	3	3	3	2½	2½	3
Motor size (hp.)	¼	⅓	½	½	¾	¾	1	1	1½	1½	2	3	5	2	3	5
Quantity of refrigerant in system (lbs.)	2	3	3	3	8	8	8	8	8	8	12	12	12	25	50	75

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Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....V-belt
Type of shaft seal.....Models E, EE, & K—rotary; others—bellows
Cylinder head cooled by.....Models PWK, PWL, PWM, E, EE, & K—waters; others—air
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....DW, E, & K models—water; other—air
Type of condenser...PA models—radiator; PW models—double tube; E & K models—shell & tube
Has receiver fusible safety plug....E & K models—no; others—yes
Type of liquid receiver.....Horizontal

Refrigerant
Kind used .....E & K models—ammonia; others—methyl chloride

Control
Make of control.....Tagliabue, Penn, Detroit Lubricator
High pressure cut-out.....All models
Point of operation of cut-out.....Methyl models—150 lbs.; ammonia—225 lbs.
Type of control...Pressure or temperature
Condensing water flow controlled by Pressure regulator
Type of overload cut-out.....Thermal

Valves
Type of discharge valve.....Disc
Type of suction valve.....Poppet
Type of water valve....Pressure actuated

Materials Used
Cylinder block.....Cast iron
Pistons.....Cast iron
Condenser tubes.....Steel
Condenser shell.....Steel

BRUNNER

Brunner Mfg. Co., Utica, N. Y.

Model No.	AT 2540	AT 3360	WT 3360	AT 7290	WT 7290	AT 9620	WT 9620	AT 12680	WT 12680
Overall Dimensions (in.)									
Width	28	28	28	36	36	36	36	36	36
Depth	18	18	18	24½	24½	24½	24½	24½	24½
Height	19	19	19	22½	22½	22½	22½	22½	22½
Refrigeration Capacity									
In. lbs. I.M.E. per 24 hrs.	240	335	335	672	672	917	917	1283	1283
Compressor Specifications									
Compressor speed (r.p.m.)	375	525	525	275	275	375	375	525	525
No. of cylinders	2	2	2	2	2	2	2	2	2
Bore (in.)	1⅝	1⅝	1⅝	2½	2½	2½	2½	2½	2½
Stroke (in.)	1⅜	1⅜	1⅜	2	2	2	2	2	2
Motor size (hp.)	1/3	1/2	1/2	3/4	3/4	1	1	1-1/2	1-1/2
Quantity of refrigerant in system (lbs.)	4	4	4	8	8	12	12	12	12
Pump down capacity of receiver in lbs.	5	5	5	13	13	13	13	13	13
Quantity of lubricant in system (lbs.)	1½	1½	1½	5	5	5	5	5	5

* * *

Compressor
Type of system.....Conventional
Type of compressor.....Reciprocating
Compressor drive.....Belt
Type of shaft seal.....Bellows
Cylinder head cooled by.....Air
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....A models—air; W models—water
Type of condenser.....A models—finned tube; W models—double tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....No

Motor
Make of motor.....Wagner

Refrigerant
Kind used .....Methyl chloride

Control
Make of control.....Detroit Lubricator
Type of control...Pressure or temperature
High pressure cut-out..On W models only
Point of operation of cut-out.....130 lbs.
Condensing water flow controlled by Automatic water valve
Type of overload cut-out...Models AT9620, WT9620, AT12680, WT12680—in magnetic starter; others—none

Valves
Type of discharge valve.....Flex leaf
Type of suction valve.....Flex leaf
Type of water valve.....Pressure

Materials Used
Cylinder block.....Nickel iron
Pistons.....Nickel iron
Condenser tubes.....Copper
Condenser shell.....Copper

VILTER

Vilter Mfg. Co., Milwaukee, Wis.

Model No.	3	5	10	15	20	30
Overall Dimensions (in.)						
Width	20	20	14	26	26	15
Depth	36	36	36	48	48	54
Height	29	29	25	30	30	26
Refrigeration Capacity						
In lbs. I.M.E. per 24 hours	276	424	848	1320	1740	2620
Compressor Specifications						
Compressor speed (r.p.m.)	1750	1750	1150	1750	1750	860
No. of cylinders	1	1	1	1	1	1
Quantity of refrigerant in system (lbs.)	4	4	8	10	10	15
Motor size (hp.)	1/3	1/2	1	1-1/2	2	3
Quantity of lubricant in system (lbs.)	3.6	3.6	5.4	11	29	11

Compressor
Type of system.....Conventional
Type of compressor.....Rotary
Compressor drive.....Direct
Type of shaft seal.....Metal-to-metal
Cylinder head cooled by.....Oil
Type of lubrication system.....Models 15, 20, 30—forced; models 3, 5, 10—splash

Condenser & Liquid Receiver
Method of cooling.....Models 15, 20, 3, 5—Air; models 30, 10—water
Type of condenser.....Models 15, 20, 3, 5—radiator; models 30, 10—shell & tube
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....No

Refrigerant
Kind used.....Models 15, 20, 3, 5—Freon; models 30, 10—ammonia

Control
Make of control.....Penn
Type of control.....Suction pressure
Condensing water flow controlled by.....Discharge pressure
Type of overload cut-out....Allen-Bradley

Valves
Type of discharge valve.....Feather
Type of water valve.....Penn

Materials Used
Cylinder block.....Semi-steel
Pistons.....Steel
Condenser tubes.....Models 15, 30, 3, 5—Copper; models 30, 10—seamless steel
Condenser shell.....Models 30, 10—seamless steel

Special Features
Three moving parts; all oil cooled.

WESTINGHOUSE

Westinghouse Electric & Mfg. Co. Mansfield, Ohio

Model No.	AS-12	AS-25	AS-50
Overall Dimensions (in.)			
Width	18¾	18¾	18½
Depth	18¾	23⅞	30
Height*	17	17	27¼
Refrigeration Capacity			
In lbs. I.M.E. per 24 hrs.	96	192	384
Compressor Specifications			
Compressor speed (r.p.m.)	1750	1750	1750
No. of cylinders	1	2	4
Bore (in.)	1	1	1
Stroke (in.)	⅞	⅞	⅞
Motor size (hp.)	1/8	1/4	1/2
Quantity of refrigerant in system (lbs.)	2½	4	8
Quantity of lubricant in system (lbs.)	2	2½	5¾

Compressor
Type of system.....Hermetic
Type of compressor.....Reciprocating
Compressor drive.....Direct
Cylinder head cooled by..Refrigerant gas
Type of lubrication system.....Splash

Condenser & Liquid Receiver
Method of cooling.....Air
Type of condenser.....Radiator
Type of liquid receiver.....Horizontal
Has receiver fusible safety plug.....Yes

Motor
Make of motor.....Westinghouse

Refrigerant
Kind used.....Sulphur dioxide

Control
Make of control.....Westinghouse
Type of control.....Temperature
High pressure cut-out.....All models
Point of operation of cut-out.....180 lbs.
Type of overload cut-out.....Spencer thermostat

Valves
Type of discharge valve.....Flapper
Type of suction valve.....Flapper

Materials Used
Cylinder block.....Semi-steel
Pistons.....Nytrided tool steel
Condenser tubes.....Copper

*Includes 5¾ in. legs which can be removed.

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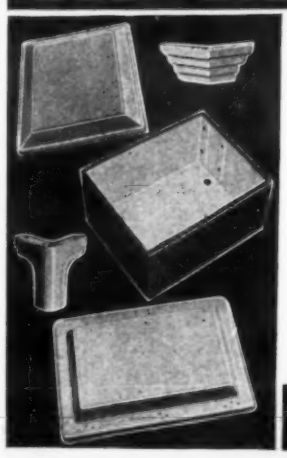

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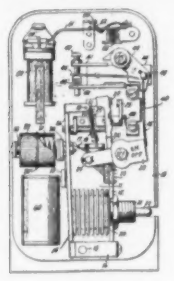
PATENTS

ISSUED AUG. 8, 1933

1,921,126. COMBINED AUTOMATIC AND MANUAL CIRCUIT CONTROLLER. Leonard P. Hutt, Schenectady, N. Y., assignor to General Electric Co., a Corporation of New York. Application Dec. 5, 1929. Serial No. 411,961. 18 Claims. (Cl. 200—81.)

1. In a circuit controlling device, the combination of a stationary contact and a movable contact movable into and out



1,921,126

of engagement therewith, at least three separate operating means for said operating means and the movable contact for effecting movement of said movable contact, out of engagement with said stationary contact, the connections of at least a plurality of said operating means to effect movement of the movable contact into engagement with said stationary contact.

1,921,127. VOLTAGE COMPENSATED REFRIGERATOR STARTER. Leonard P. Hutt, Schenectady, N. Y., assignor to General Electric Co., a Corporation of New York. Application April 30, 1930. Serial No. 448,731. 9 Claims. (Cl. 172—279.)

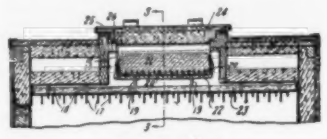
1. In a control device for a motor having a running winding and a starting winding, a switch for energizing said motor, a circuit controlling device for connecting the starting winding of said motor to be energized upon starting the motor, a plurality of electro-responsive devices for said circuit controlling device, one of said electro-responsive devices being connected to be responsive to the voltage across the starting winding to actuate said circuit controlling device to open the circuit to the starting winding, and another of said devices being responsive to the current through said running winding for rendering said first device ineffective while said motor is being started.

1,921,137. COMPOSITION FOR TREATING WATER USED IN AIR CONDITIONING APPARATUS AND THE LIKE. Morris Schlissel, Brooklyn, N. Y., assignor to Cosmopolitan Chemical Co., Inc., Long Island City, N. Y., a Corporation of New York. No Drawing. Application Feb. 3, 1932. Serial No. 590,678. 2 Claims. (Cl. 87—27.)

1. A composition to be added to water used in air conditioning apparatus for preventing corrosion, congestion and rust in said apparatus consisting of the following ingredients and their reaction products: water approximately 6.78 per cent, caustic soda approximately 1.45 per cent, sodium bichromate approximately 1.16 per cent, soda ash, approximately 2.90 per cent, disodium phosphate approximately 1.63 per cent, sodium silicate approximately 86.08 per cent, and tannin .006 per cent.

1,921,147. METHOD OF AND MEANS FOR CONTROLLING LOW TEMPERATURE REFRIGERANTS. William F. Baird, Winchester, Mass. Application July 13, 1929. Serial No. 378,014. 6 Claims. (Cl. 62—91.5.)

6. The method of controlling the refrigerating effect of a low temperature refrigerant on a cabinet to be refrigerated,



1,921,147

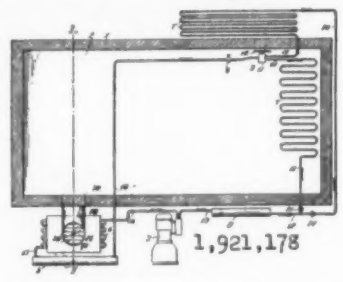
which comprises maintaining between said refrigerant and cabinet a volatile heat-transferring substance simultaneously in its three physical states, to wit, solid, liquid and vapor.

1,921,163. REFRIGERATING APPARATUS. Mahlon W. Kenney, Elmhurst, and S. Ernest Vickers, Norwood Park, Ill., assignors, by mesne assignments, to Grigsby-Grunow Co., a Corporation of Illinois. Application June 30, 1930. Serial No. 464,882. 11 Claims. (Cl. 62—115.)

1. In a refrigerating apparatus of the compression expansion type wherein lubricant and refrigerant mingle the combination of a flooded evaporator having a gas outlet pipe therefrom and capillary means separating the gas space within the evaporator from the space within the outlet pipe for removing lubricant from the evaporator.

1,921,178. TEMPERATURE CONTROL APPARATUS. Edward C. Wood, Highland Park, Ill., assignor to North American Car Corp., Chicago, Ill., a Corporation of Illinois. Application June 4, 1932. Serial No. 615,412. 12 Claims. (Cl. 62—117.)

1. A temperature controlling mechanism comprising a single heat transferring apparatus of the type in which a heat trans-



1,921,178

fer medium moves in a closed circuit comprising a pair of evaporators one positioned in each of two separated spaces, and a single condenser, means for circulating the heat transfer medium alternatively through either one or the other of the evaporators, and means for circulating air in contact with the condenser from the space in which the evaporator not functioning is located and back to said space.

1,921,257. AIR CONDITIONING APPARATUS. Lee W. Melcher, Winnetka, Ill. Application July 18, 1931. Serial No. 551,696. 12 Claims. (Cl. 62—117.)

1. In an air conditioning apparatus of the character described, the combination of a housing having an air inlet, an air filter in the housing, a motor-driven fan arranged in the housing to draw air through the inlet and to force the air through the filter and then out of the housing, and a refrigerating unit comprising a housing connected detachably to the first mentioned housing, a motor-driven compressor in the second mentioned housing, and a refrigerant line connected to the compressor, extending through an opening in said first mentioned housing into an operative position wherein it serves to cool the air forced by the fan through the filter and removable from its operative position through the opening upon detachment of the refrigerating unit from the housing for the filter and fan.

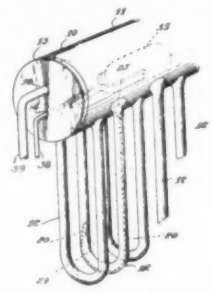
1,921,383. LIQUID COOLER. Harry E. Crosby, Huntington Park, Calif., assignor to Mission Dry Corp., Ltd., Los Angeles, Calif., a Corporation of Delaware. Application Oct. 20, 1930. Serial No. 489,933. 1 Claim. (Cl. 62—141.)

A cooling unit for liquids, comprising a chamber, inlet and outlet pipes for the chamber, and a refrigerating unit in the chamber, said refrigerating unit including a cylinder, and holow cylindrical extensions on the lower portion of the cylinder and extending into the liquid to be cooled for providing additional contacting cooling surface said extensions provided with closed ends, together with a liquid inlet pipe and a gas outlet pipe for the cylinder, and a float valve control for the inlet pipe.

1,921,549. APPARATUS FOR MANUFACTURING ICE IN PLATES. Henri Jacobus Spaan, Surabaya, Java, Dutch East Indies. Application Nov. 14, 1931, Serial No. 575,065, and in the Netherlands June 29, 1931. 1 Claim. (Cl. 62—160.)

1,921,573. EBULLITION INITIATOR. Carleton J. Lauer and Harold R. McPhail, Detroit, Mich., assignors to Kelvinator Corp., Detroit, Mich., a Corporation of Michigan. Application May 2, 1927. Serial No. 188,358. 15 Claims. (Cl. 62—126.)

12. A refrigerating system comprising an evaporator for containing a quantity of refrigerant liquid and a relatively long flexible member for insertion into the



1,921,573

evaporator beneath the level of the liquid therein, said member having means associated with the surface thereof for initiating evaporation of the liquid.

1,921,576. REFRIGERATING APPARATUS. Glenn Muffly, Richmond, Mich., assignor to Copeland Products, Inc., a Corporation of Michigan. Application March 5, 1931. Serial No. 520,335. 9 Claims. (Cl. 62—116.)

1. A refrigerator cabinet provided with a heat-insulated compartment having a cooling unit removably positioned therein, a heat-dissipating unit removably mounted adjacent to said compartment, conduits connecting said units through an open sided slot in one wall of said compartment, a packing member provided about the conduit and encompassed by the side wall of the slot and a finish strip removably retained on the front edge of said wall in such manner as to constitute a continuation of the front surface of the compartment.

1,921,578. REFRIGERATOR CAR DOOR. John F. O'Connor, Chicago, Ill., assignor to W. H. Miner, Inc., Chicago, Ill., a Corporation of Delaware. Application Oct. 8, 1931. Serial No. 567,609. 7 Claims. (Cl. 20—23.)

1. In door construction for refrigerator cars having a wall member provided with a door opening, the combination with a single door adapted to close said opening; of guide tracks on said wall member above and below said door opening; a bracket slidably guided on each track; a vertically disposed operating bar journaled on said door; crank arms at the top and bottom ends of said bar; means at the outer end of the lower crank arm journaled in the bracket of the lower guide track, said means including a roller journaled on the outer end of said arm having rolling engagement with said lower guide track; and a cylindrical crank pin member at the outer end of the upper crank arm journaled in the bracket of the upper guide track.

1,921,584. MANDREL. Ward M. Robinson, Port Huron, Mich., assignor to Mueller Brass Co., Port Huron, Mich., a Corporation of Michigan. Application July 6, 1931. Serial No. 548,937. 2 Claims. (Cl. 113—49.)

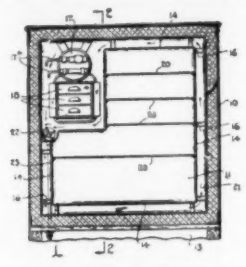
1. A mandrel for upsetting operations comprising a plurality of segments fitting together to form an assembly of generally cylindrical contour, at least one of said segments having a regular cylindrical surface, and at least one other of said segments having a protrusion on its otherwise cylindrical surface, said segments being so constructed that, upon removal of said segment having a regular surface from the assembly, said segment having the protrusion thereon may be moved into such position that it is entirely within the confines of the regular cylindrical contour of the assembly.

1,921,829. REFRIGERATING MACHINE. Leland G. Knapp, Chicago, and Joseph N. Roth, Arlington Heights, Ill., assignors to Montgomery Ward & Co., Inc., Chicago, Ill., a Corporation of Illinois. Application Sept. 28, 1929. Serial No. 395,860. 4 Claims. (Cl. 248—16.)

1. A mounting for motor-compressor units, comprising a sustaining member, supporting vertically-elongated casings, yielding inserts disposed within the casings, the sustaining member anchored in the upper portions of the inserts, the casings closely fitted about and laterally supporting substantially the lower half of the inserts and leaving the upper half free to yield both laterally and vertically.

1,921,865. REFRIGERATOR. Chalmer C. Curtis, Cuyahoga Falls, Ohio. Application Jan. 31, 1931. Serial No. 512,593. 4 Claims. (Cl. 62—116.)

1. In a refrigerator, the combination of a cabinet, a food compartment therein comprising metal walls which are spaced



1,921,865

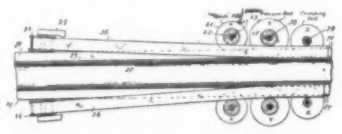
from the walls of the cabinet and define a fluid-tight passage therebetween, and a refrigerating unit mounted in said passage, said unit having a sharp-freezing compartment, the food compartment wall being formed with an aperture therethrough, and the margins of the aperture being sealed to the refrigerating unit about the opening to the sharp-freezing compartment therein.

1,921,927. FIN TUBING. Russell C. Jones, Bronxville, and Robert Colston, New Rochelle, N. Y., assignors to The Griscom-Russell Co., New York, N. Y., a Corporation of Delaware. Application Aug. 1, 1929. Serial No. 382,756. 5 Claims. (Cl. 257—262.)

1. A heat exchanger element comprising a tube having a plurality of parallel longitudinal grooves in the surface thereof, and metal ribbon disposed edgewise in said grooves and forming heat exchanging fins projecting from the surface of the tube, the metal of the tube adjacent the edgewise placed ribbon being displaced against the surface of the ribbon.

1,921,928. METHOD OF MAKING FINNED TUBING. Russell C. Jones, Bronxville, and Robert Colston, New Rochelle, N. Y., assignors to The Griscom-Russell Co., New York, N. Y., a Corporation of Delaware. Application Jan. 5, 1931. Serial No. 506,612, and in Canada July 16, 1930. 2 Claims. (Cl. 29—157.3.)

1. The method of making finned tubing which comprises forming longitudinal grooves in the surface of the tubing, and



1,921,925

affixing fins in a plurality of said grooves at a plurality of positions spaced from one another longitudinally of the tubing so as to permit the feeding of said fins to the tubing without interference with one another.

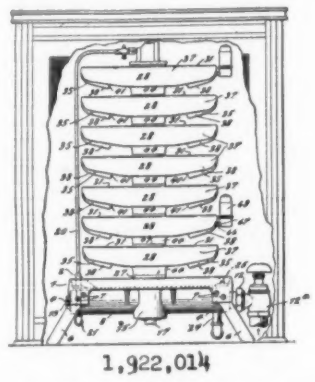
1,921,975. APPARATUS FOR MAKING FINNED TUBING. Russell C. Jones, Bronxville, and Robert Colston, New Rochelle, N. Y., assignors to The Griscom-Russell Co., New York, N. Y., a Corporation of Delaware. Original application Jan. 5, 1931, Serial No. 506,612, and in Canada July 16, 1930. Divided and this application Feb. 23, 1932. Serial No. 594,564. 10 Claims. (Cl. 29—33.)

1. In an apparatus for securing metal ribbon to metal tubes to form finned tubing, grooves forming devices mounted in spaced relation around the periphery of a tube and arranged to support the tube at a plurality of points around its periphery, means for drawing the tube longitudinally in co-action with said grooving devices thereby forming a plurality of substantially longitudinal grooves in the surface of the tube, means for feeding the ribbon in alignment with the axis of the tube edgewise into proximity to said grooves as the tube moves forward, rolls co-acting with the ribbon to press the same into said grooves and means for displacing the metal of the tube against the sides of the ribbon to anchor the ribbon to the tube.

10. In an apparatus for securing metal ribbon to metal tubes to form finned tubing, stationary grooving devices, means for engaging one end of the tube to draw the same longitudinally in co-action with said grooving devices to form a plurality of longitudinal grooves in the surface of the tube, and groups of ribbon supplying and affixing devices disposed in spaced relation longitudinally of the tube, said tube drawing means including mechanism for preventing the rotation of the tube during the advance thereof so as to cause the fins to be affixed in lineal parallel relationship to one another.

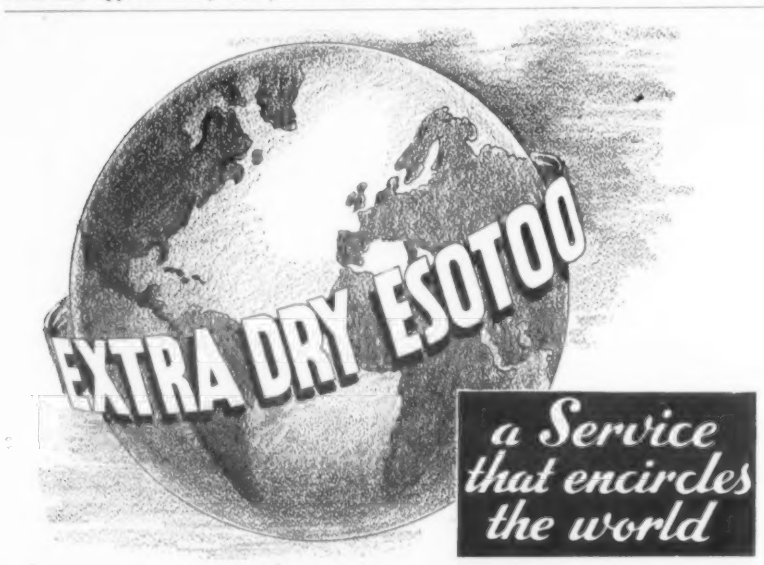
1,922,014. HUMIDIFYING APPARATUS. Charles W. Brabbee, Bronxville, N. Y., assignor to American Radiator Co., New York, N. Y., a Corporation of New Jersey. Application Nov. 28, 1931. Serial No. 577,751. 18 Claims. (Cl. 257—180.)

1. An apparatus of the character described, comprising a plurality of superposed horizontally disposed chambered ele-



1,922,014

ments vertically spaced from each other, certain of said elements having an upper wall the outer face of which is substantially horizontal and constituting a liquid-receiving surface, means at the sides of said certain of said elements to retain liquid on said surface, said certain of said elements being provided at the opposite ends thereof with means permitting liquid to flow from said surface element adjacent said ends being formed to cause liquid flowing over the ends of said certain of said elements to flow over the under surface thereof, means to guide the overflowing liquid on said under surface, means for supplying liquid onto certain of said liquid-receiving surfaces between said ends, and means for admitting a fluid heating medium into said elements.



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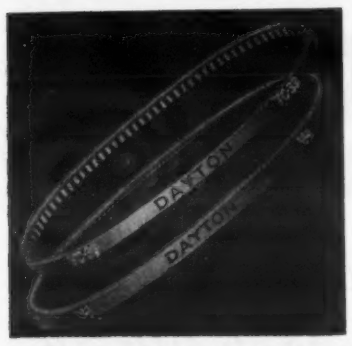

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CATALOGS

Bonderized Beer Kegs

Bonderizing of steel beer kegs to form a base for pitch linings and outer finish is explained in the June 15 issue of the Parkerizer, organ of Parker Rust-Proof Co., Detroit. Features of the process are pointed out, illustrated with two views of a beer keg which Murray Corp. of America builds, and a cut-away showing the results of bonderizing.

Her-Nel-Co. Air Conditioners

"The Story of Air Conditioning for Schools" is told in a colorful booklet by that name issued by Herman Nelson Corp., Moline, Ill. Greatest portion of the brochure is taken up with functions of the air which are assisted by air conditioning. Features of Her-Nel-Co and Univent conditioners and Auxilirator radiators, manufacturing processes, the five steps in school air conditioning, and schools equipped with Herman Nelson air-conditioning products are illustrated and described.

Refrigeration Service Catalog

Issued about Aug. 4 was Catalog No. 5 of Refrigeration Service, Inc., Los Angeles, containing an alphabetical listing of supplies furnished by this company to jobbers and service agencies. First three parts of the catalog list service tools, parts and supplies, and accessories. A data section with list prices concludes the booklet.

Rutledge Natur-Air System

Going out to meat markets in Canada and this country is a new promotion piece by Robert Rutledge of Toronto giving advantages of the Rutledge Natur-Air System for humidifying and purifying air in enclosed spaces. Meat spoilage due to foul air in display cases is discussed, together with the Rutledge method of rectifying this condition.

American Radiator Air Conditioners

Popularized story of the need for air-conditioning is told in American Radiator & Standard Sanitary Corp.'s pamphlet, "Romance of Air," in which heat, humidification, ventilation, air cleaning, cooling, and dehumidification as necessities to good air are discussed historically and scientifically. Typical air-conditioning products of the corporation are pictured on concluding pages.

Majestic Radio Parts

Of interest to radio service men and dealers is Grigsby-Grunow's new radio parts catalog. Complete with diagrams, prices, and service information, the 96-page book gives instructions for servicing every Majestic radio which has been placed on the market up until this summer.

Baker Beer-Cooling Equipment

"All Were Considered . . ." is the front-cover message of a new mailing piece being issued by Baker Ice Machine Co., Omaha, to advertise its beer-cooling equipment. The inside pages tell of seven recent brewery installations in which "all were considered and Baker was chosen," together with features of Baker refrigerating machines.

Westinghouse Battery Chargers

A new four-page leaflet on Rectox battery chargers is available from Westinghouse Electric & Mfg. Co., East Pittsburgh. Construction, application, and operation of the charger are explained in the pamphlet, which points out features of this type of dry, non-chemical, metallic oxide rectifier. Specifications and prices are included.

Torridheet Oil-Burner Boilers

Cleveland Steel Products Corp. has issued a new mailing piece from its Torridheet division advertising Torridheet Oil-Burner Boilers. The cream-and-brown leaflet carries pictures of the burner and its ropeller feature, specifications, mechanical description, and an outline of advantage to the user.

Riley Refrigerating Appliances

Set forth by means of pictures, explanatory text, and charts, the new products of Riley Engineering Corp., Detroit, are fully described in its new catalog of standard refrigerating appliances. Automatic controls, expansion and float valves, hydrated refrigerating oils, Clifford Mfg. Co. metallic bellows, and Ansul sulphur dioxide are among the parts and accessories listed. Also included are a section on shaft seal patents and licensing agreements.

Arco Convectors

American Radiator & Standard Sanitary Corp. of New York City has brought out a bulletin on its Arco convectors, defining features and uses of different models. Specifications and line drawings of the convectors, which are adapted for use with hot water and steam, take up the major portion of the booklet.

Sturtevant Conditioners

Catalog No. 392 of the B. F. Sturtevant Co., Hyde Park, Boston, discusses and pictures the various types of unit apparatus produced by this company for the air-conditioning field. Functions and particular applications of the Sturtevant unit conditioner, humidifiers, speed heaters, railroad air-conditioning unit, suspended types, and filticooler are explained.

Bull Dog Trolley Duct Systems

How the Bull Dog Trol-E-DUCT system makes electric power and light portable for industrial operations is described in an illustrated pamphlet entitled "Portable Electricity," issued by Bull Dog Electric Products Co., Detroit. Views of assembly lines employing the system illustrate the functions and applications set forth in the text.

Cornelius Oil Burners

Being mailed out to oil burner prospects by The Cornelius Co., Minneapolis, is an orange-bordered folder advertising Cornelius burners. Mechanical features of the unit are discussed in detail and shown in diagrammatic pictures.

QUESTIONS

Revolving Food Tray

No. 1336 (Dealer, Indiana)—"Could you put us in communication with a firm that manufactures a revolving food tray for an electric refrigerator? We have a customer interested in one, and would appreciate this service very much."

Answer—We have no record of such a product. Any company making one is invited to get in touch with ELECTRIC REFRIGERATION NEWS.

Electrice Parts

No. 1337 (Dealer, Kansas)—"Can you give me the address of a company that can furnish parts for the Electrice Machine, formerly made by Belding-Hall Co.?"

Answer—Deissler Machine Co., 31 N. Mercer St., Greenville, Pa.

State Beer Laws

No. 1338 (Manufacturer, Illinois)—"We would like to have a summary of all beer laws in various states, telling exactly how the laws affect the sale of draft beer."

Answer—A digest of all state beer laws is being prepared for the BEER COOLING DIRECTORY AND HANDBOOK which will be published Sept. 1.

Corrosion-Resistant Ice Cube Trays

No. 1339 (Pennsylvania)—"Please send me any information you have about the chemical treatment which is being given to ice cube trays in many makes of electric refrigerators. We would like to know if they are acid-resisting, particularly to citric acid. This information is wanted for a sales meeting scheduled for next Saturday morning."

Answer—Consult the Oct. 5, 1932, issue of the NEWS which carries a complete description of the "anodic" treatment of ice cube trays.

NRA Electrical Code

No. 1340 (Distributor, Massachusetts)—"Will you please let us know where we can obtain a copy of the proposed code for the electrical industry which we understand has been filed, and is about to be signed in Washington?

"Is there any organization of electric refrigeration retailers that we could join, or anything we should do to help protect the interests of the retailers with respect to this code? We would also appreciate any similar information you can give us about codes in the oil burner industry."

Answer—The code under which the electrical industry will operate as submitted by the National Electrical Manufacturers Association and approved (since your letter) by President Roosevelt and General Johnson, was published in full in the Aug. 9 issue of the NEWS.

At present the Refrigeration Division of Nema is working on a supplemental code to the general electrical code. In the Aug. 16 issue of the NEWS will be found a report of one meeting of this division. Another meeting is scheduled for Aug. 30, at which time it is hoped that the supplemental code will be completed.

Refrigerated Trucks

No. 1341 (Manufacturer, Pennsylvania)—"Kindly send us literature or any available information about refrigeration units that can be adopted to commercial motor trucks. We are requesting this information from you at the suggestion of Mr. W. C. Becker, Electrical Equipment Division, U. S. Department of Commerce, Washington, D. C."

Answer—See the August issue of REFRIGERATED FOOD NEWS which featured new developments in the application of refrigeration system to motor trucks. This issue contains a complete directory of refrigerated truck manufacturers, and various reports of refrigerated trucks now in service.

Dehydrating Cartridges

No. 1342 (Distributor, Massachusetts)—"Will you kindly send us the names of companies making Silica-Gel cartridges for maintaining dry air between the glasses of display cases."

Answer—Try Garden City Plating & Mfg. Co., 1430 S. Talman Ave., Chicago, Ill., and Kason Hardware Corp., 61 Navy St., Brooklyn, N. Y.

Service Schools

No. 1343 (Texas)—"Do you know of any school that I could attend, or take a correspondence course from, to learn refrigeration service work?"

Answer—Utilities Engineering Institute, 404 N. Wells St., Chicago, Ill.

CLASSIFIED

PAYMENT in advance is required for advertising in this column.

RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

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MEN WANTED who have experience in installing and servicing Commercial and Domestic machines using Methyl Chloride. Box 584.

POSITIONS WANTED

YOUNG executive, ability to attract, highest quality distribution. Dynamic and intensive in operations, exceptional analytical ability with eleven years' refrigeration merchandising experience, hermetic and conventional, domestic and commercial, desires connection as District Sales Manager with reputable manufacturer where productiveness will be appreciated. Recently Eastern District Sales Manager one of largest national manufacturers. Box 583.

DESIGNER with experience from a large refrigerator company and familiar with the design of the machinery for electric refrigeration. Box 585.

INDEPENDENT SERVICE COMPANIES

HALECTRIC Thermostat repair service, Ranco, B & B, Two dollars each, one year guarantee, prompt service. Halectric Laboratory. 1793 Lakeview Road, Cleveland, Ohio.

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